Nov. 17, 1931. L. TOFFOLO ET AL 1,832,267

ROTARY POLISHING MACHINE

Filed Nov. 4, 1929

Fig. 1

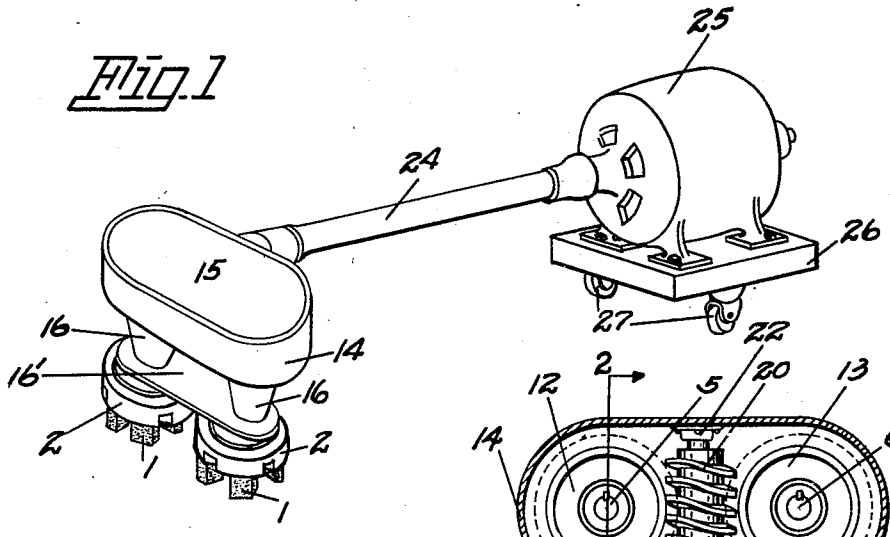


Fig. 2

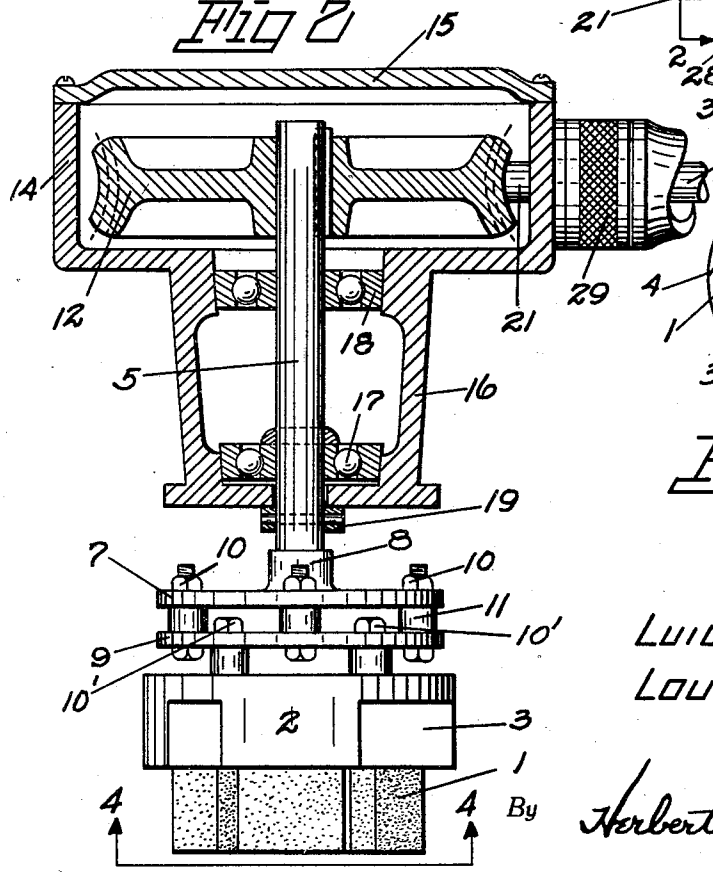


Fig. 3

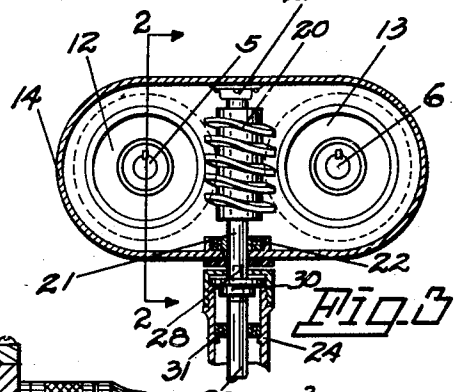
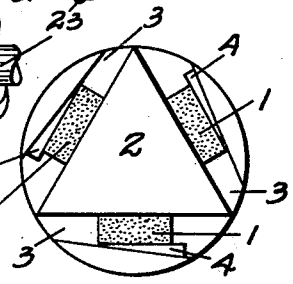


Fig. 4



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UNITED STATES PATENT OFFICE

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ROTARY POLISHING MACHINE

Application filed November 4, 1929. Serial No. 404,621.

Our present invention relates to improvements in rotary polishing machines especially adapted for use on plane surfaces, as for instance terrazzo and similar floors. As is well known such floors are laid while the material is in plastic condition, and the floor is leveled and smoothed before the plastic material has set. After the material has set and hardened, the machine tool of our invention is utilized for polishing the surface by the employment of abrading stones or blocks. The abrading stones or polishing blocks are mounted in a plurality of rotary tool heads, and the machine tool of which the rotary heads form a part is motor-operated and portable in order that the polishing machine may glide over the floors with the tool heads in continuous rotation for smoothing and polishing the floor surface. Our invention consists in certain novel combinations and arrangements of parts as will hereinafter be more fully set forth and claimed.

In the accompanying drawings we have illustrated one complete example of the physical embodiment of our invention wherein the parts are combined and arranged according to one mode we have so far devised for the practical application of the principles of our invention.

Figure 1 is a perspective view of a machine tool embodying our invention. Figure 2 is an enlarged vertical sectional view at line 2—2 of Figure 3. Figure 3 is a horizontal sectional view through the gear case showing the driving gears for the two rotary tool heads. Figure 4 is a face view of one of the tool heads with a number of abrading stones or polishing stones fixed therein, as at line 4—4 of Figure 2.

In carrying out our invention we preferably use a pair of rotary tools, each of which is provided with a number of polishing stones or abrading blocks as 1 of suitable material and designed to rub, with a rotary action, over the surface to be polished. These stones are mounted in a round tool head 2, which on its bottom face is provided with tangential grooves 3 in which the stones are clamped by means of wedges 4, so that the stones may readily be removed and replaced when desirable or necessary.

Each tool includes a shaft 5, or 6, spaced apart and arranged vertically in parallelism, with the tool heads supported therefrom with flexible couplings that provide a joint which permits the tool heads to adjust the stones evenly on the surface to be polished, thus compensating for possible irregularities in the floor surface, and at the same time insuring a strong and durable joint.

This flexible joint or coupling includes a metal disk 7 having a hub 8 that is rigid with the lower end of the shaft, and a flexible disk 9, which may be leather or other similar tough and flexible material. The two disks are coupled by bolts 10, and disk 9 and the tool head are also coupled by bolts as 10′, and the bolts pass through spacing bushings 11 that separate the two disks and disk 9 and tool head 2.

At the upper ends of the tool shafts 5 and 6 are keyed the respective worm gears 12 and 13, which gears are enclosed with a gear housing 14 having a lid or cover 15. At the underside of the gear housing are fashioned a pair of shaft-housings 16, preferably of tapering shape and integrally joined at their lower ends by the brace or flange 16′, and spaced bearings 17 and 18 are provided within the housings 16 for the shafts. The rotary tool is secured within the gear case and shaft housing by means of a collar 19 that is pinned to the shaft below the shaft housing, as seen in Figure 2.

The two gear wheels and their shafts are rotated in opposite directions by means of an intermediate worm-gear 20 that meshes with the two wheels and is journaled at 22 in the walls of the gear case, the shaft 21 of the worm gear being disposed transversely of the gear case as seen in Figure 3.

A motor shaft or drive shaft 23 is alined with the worm shaft and journaled in a tubular housing 24 which, at one end is secured to a part of the electric motor 25 which provides the power for operating the machine tools. The motor is supported on a carriage 26 having castor wheels 27, and the operator of the machine usually straddles and sits on

the motor with his feet on the floor, while he uses his hands (and feet) for swinging the tools as they rotate. The operator grasps the tubular housing 24 in his hands, and with his feet on the floor as an anchor, he guides the rotating heads or machine tools over the surface to be polished.

In order that the machine tools may be disconnected from the tubular housing and the motor, a separable joint is provided between the worm shaft 21 and the motor shaft 23, which shafts are joined by a key 28. On the end of the housing 24 a cap nut 29 is threaded, and a collar 30 on the motor shaft joins the shaft ends within the tubular housing, which housing has a bearing ring 31 for the shaft. By unscrewing the cap nut, access may be had to the set collar 30 so that the latter may be loosened to permit separation of the worm shaft from the alined motor shaft, and of course these parts may be joined by a reversal of the operation described.

Having thus fully described our invention what we claim as new and desire to secure by Letters Patent is:—

1. The combination in a polishing machine with a pair of rotary tools and their shafts, said tools each including a head, a flexible joint between each shaft and head, a gear case and gears on said shafts, a worm gear for said gears and a worm shaft, a portable motor, a tubular housing connecting the motor and case, a drive shaft, and a separable joint between the drive shaft and the worm shaft.

2. The combination with a motor and its carriage, of a gear case, rotary tool shafts journaled in the case and gears on the shafts, a worm gear and its shaft for driving the gears, said worm gear shaft being journaled in the case, a driving shaft from the motor, a housing for the shaft rigid with the motor, a separable coupling between the worm gear shaft and the driving shaft, a collar on the shaft and a cap nut on the end of the housing adjacent the gear case at the separable joint, a tool head for each tool shaft, and a flexible coupling between each tool head and its shaft.

In testimony whereof we affix our signatures.

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