No. 863,172. PATENTED AUG. 13, 1907

N. C. HARRISON.

STONE CUTTING AND POLISHING WHEEL.

APPLICATION FILED JAN. 29, 1907.

Fig. 1.

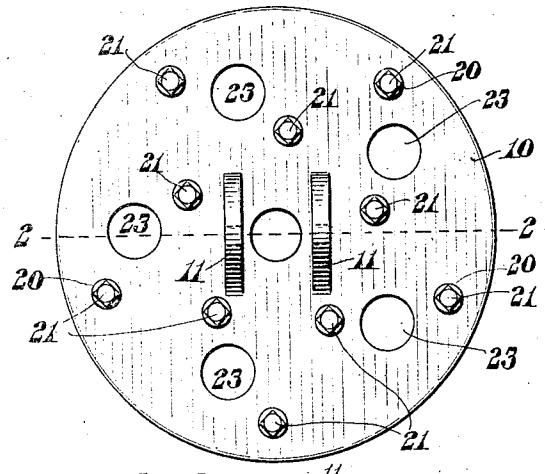


Fig. 2.

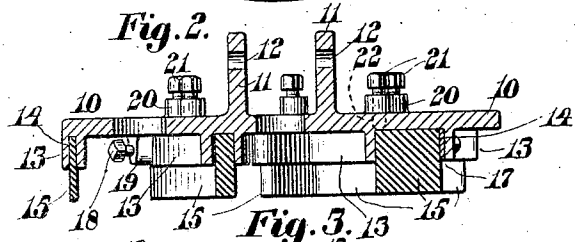
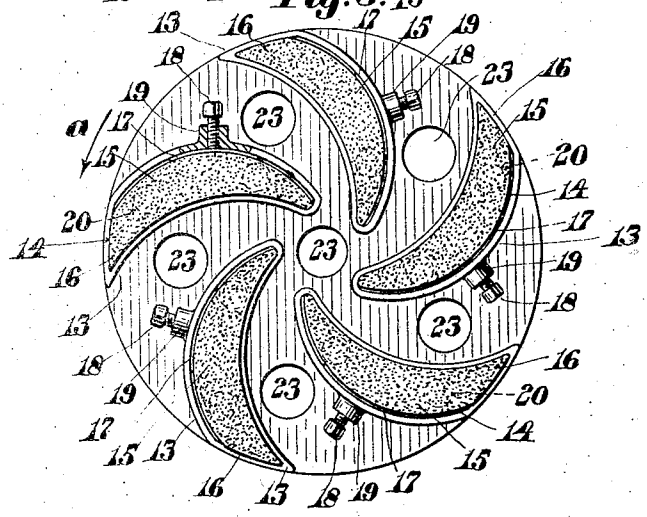


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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STONE CUTTING AND POLISHING WHEEL.

No. 863,172. Specification of Letters Patent. Patented Aug. 13, 1907.

Application filed January 29, 1907. Serial No. 354,643.

To all whom it may concern:

Be it known that I, NATHAN C. HARRISON, a citizen of the United States of America, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Stone Cutting and Polishing Wheels, of which the following is a specification.

This invention relates to stone cutting and polishing wheels and has for its object the production of a suitable revoluble wheel adapted for use primarily for finishing marble and any similar material.

A further object of the invention is the production of a wheel in which a plurality of shoes having suitable finishing properties are adjustably mounted in suitable pockets formed therein and which is provided with a suitable means of securing said shoes in said pockets.

A further object of the invention is the construction of such shoes of a suitable curved shape and the mounting of the same upon said wheel in such a manner that the revolution of said wheel will cause said shoes to act simultaneously to cut the material being operated upon and at the same time effect a suitable rubbing action for the purpose of smoothing the material previously cut and polishing the same.

The invention consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims hereinafter given.

Of the drawings: Figure 1 represents a plan of a wheel embodying the features of this invention. Fig. 2 represents a vertical section of the same on line 2—2 on Fig. 1, and Fig. 3 represents an inverted plan of the same.

In the drawings, 10 represents a suitable circular plate provided upon its upper face with projecting ears 11 having openings 12 therethrough by which the plate may be secured to a revolving arbor or shaft forming part of any well-known polishing machine which it is obvious may be power driven or operated manually. From the under face of said plate 10 project a plurality of flanges 13 forming pockets 14 which are substantially crescent shaped and radiate from the center of said plate 10 substantially as shown in Fig. 3 of the drawings.

In each of the pockets 14 is mounted a shoe 15 substantially fitting said pocket and extending considerably beyond the ends of the flanges 13 as indicated in Fig. 2. These shoes 15 are preferably made of alundum or emery or some similar material which is sufficiently hard to secure a cutting effect at its front edge and a rubbing or smoothing effect upon its outer face.

The plate 10 is revolved in the direction of the arrow "*a*" on Fig. 3 and when so revolved the outer ends 16 of the shoes 15 are considerably in advance of the inner ends thereof so that as the wheel revolves the front edge of each shoe has the effect of a shearing cut upon any material upon which it is operating. The outer faces of the shoes 15 are all in the same plane and bear directly upon the material being operated upon and this face has a rubbing or polishing effect upon said material. The shoes 15 have interposed between the inner wall of the flanges 13 of each shoe a spring plate 17 against which bears the set screw 18 threaded to a boss 19 projecting from a flange 13. By adjusting the screws 18 the shoes are held securely in position in the pockets 14.

Should the set screws become loosened the spring 17 will itself have sufficient tension upon said shoes to retain the shoes in position. Preferably, however, it is found desirable to secure the advantage of both the spring of the plate 17 and also the in ginging action of the set screws 18. The upper face of the plate 10 is provided with a plurality of bosses 20 to each of which is threaded an adjusting screw 21 the inner end of which bears upon the inner face of the shoes 15 to permit a suitable adjustment of said shoes (as indicated in dotted lines at 22 in Fig. 2) to bring all of the outer faces of said shoes in the same plane and into contact with the material being treated.

The plate 10 is provided with a plurality of openings 23 which permit the dust and chips to pass through the plate and thereby prevent them from interfering with the proper working of the wheel.

In the operation of the invention the wheel is secured to any suitable revoluble arbor or shaft and is revolved at a desired rate of speed in the direction indicated by the arrow "*a*" on Fig. 3 and the marble or other stone to be treated is presented to the outer faces of the shoes 15. It is obvious that when the material is so presented to said outer faces and the wheel revolved the front edge of each of the shoes will act upon the material to cut therefrom any protuberances or inequalities extending from the face of said material wholly removing the same and the face of the shoe immediately in the rear of said cutting edge will rub down and polish the material, leaving it in condition for the reception of the putty powder which is used to put the final gloss upon said material.

By the use of a wheel constructed as shown and described herein the marble or other material may be taken directly from the saws and subjected to treatment by the wheel and prepared immediately for the final finishing, the cutting edge removing the roughened ridges caused by the action of the saws while the face of the shoes smooths the whole surface of the material and polishes the same. By the use of a wheel of this construction no grits, pumice stone, or hone are necessary to suitably prepare the material being treated, which is a great advantage as by dispensing with these materials the danger of the wheel gumming and glazing is obviated. This makes a very simple construction of a stone finishing wheel which is very effective in its

operation materially lessening the labor of finishing the stone being treated and making a great saving of time in accomplishing the finishing process.

It is believed that from the foregoing description the operation and the many advantages of the invention will be fully apparent without any further description.

Having thus described my invention, I claim:

1. In a stone finishing wheel, the combination of a revoluble plate provided with a plurality of curved pockets the walls of which project from the face of said plate, leaving passages between the outer walls of said pockets extending to the outer ends of said pockets through which the waste material may freely circulate; a shoe having suitable finishing properties in each pocket; and means for retaining said shoe therein.

2. In a stone finishing wheel, the combination of a revoluble plate having projecting from its outer face crescent-shaped projections extending from points near the center of said plate separated throughout their lengths and each provided with a pocket therein, closed at the inner end by said plate; an abrading member in each of said pockets the working face of which is of a spiral shape; adjusting members extending through said plate against said abrading members; and clamping screws extending through the wall of said pockets adapted to clamp said abrading members in position.

3. In a stone finishing wheel, the combination of a revoluble plate having projecting from its outer face intermediate said openings crescent-shaped projections separated throughout their lengths, extending from points near the center of said plate each provided with a pocket therein, closed at the inner end by said plate; an abrading member in each of said pockets the working face of which is of a spiral-shape; adjusting members extending through said plate against said abrading members; a spring plate bearing against the rear face of said abrading member; and adjustable members extending through the rear wall of each pocket for regulating the tension of said spring plate upon said member.

Signed by me at Boston, Mass., this 25th day of January, 1907.

NATHAN C. HARRISON.

Witnesses:
M. J. ELMENDORF,
WALTER E. LOMBARD.