No. 696,195.

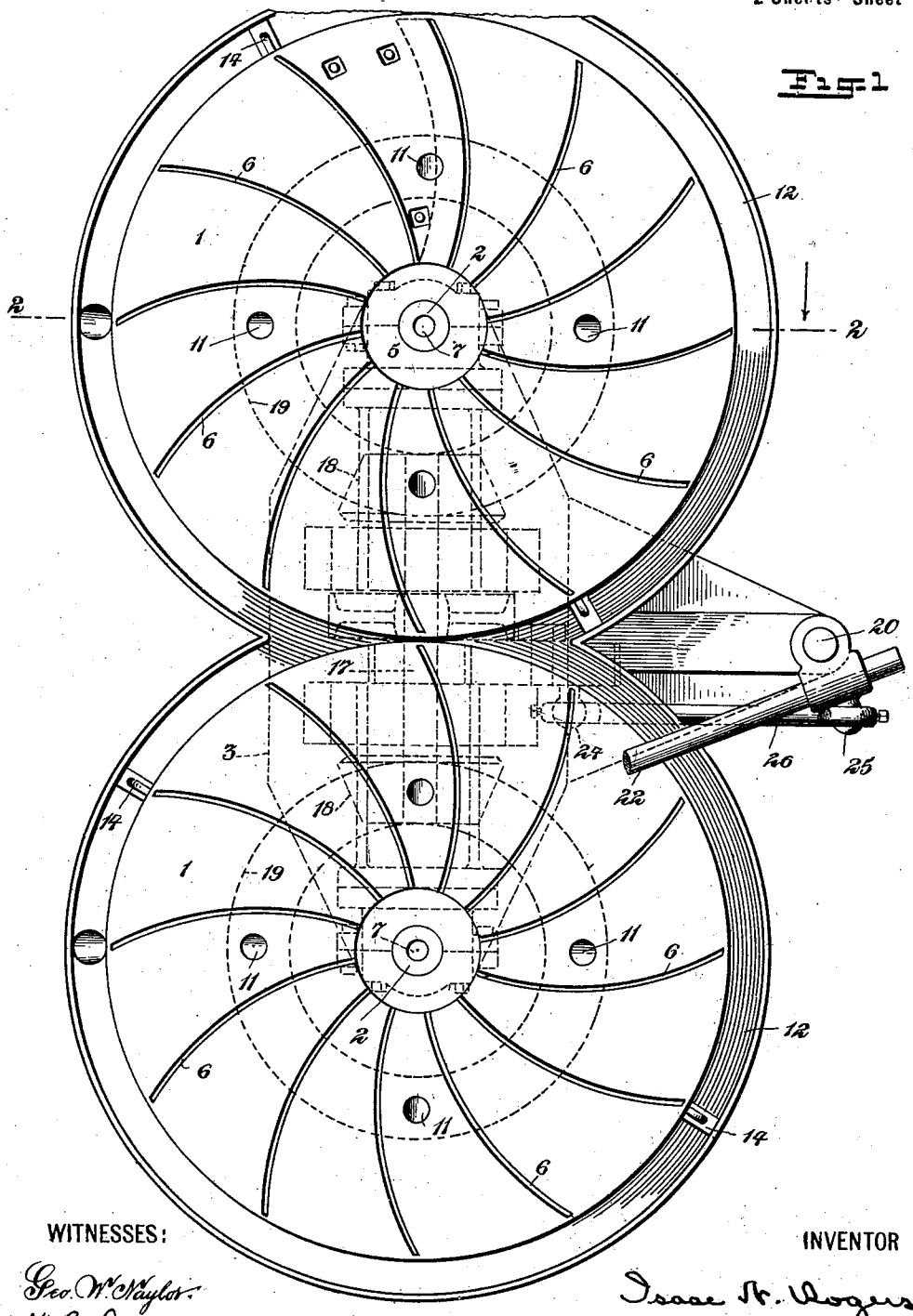
I. N. ROGERS. Patented Mar. 25, 1902.

STONE GRINDING AND POLISHING MACHINE.

(Application filed Feb. 27, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1



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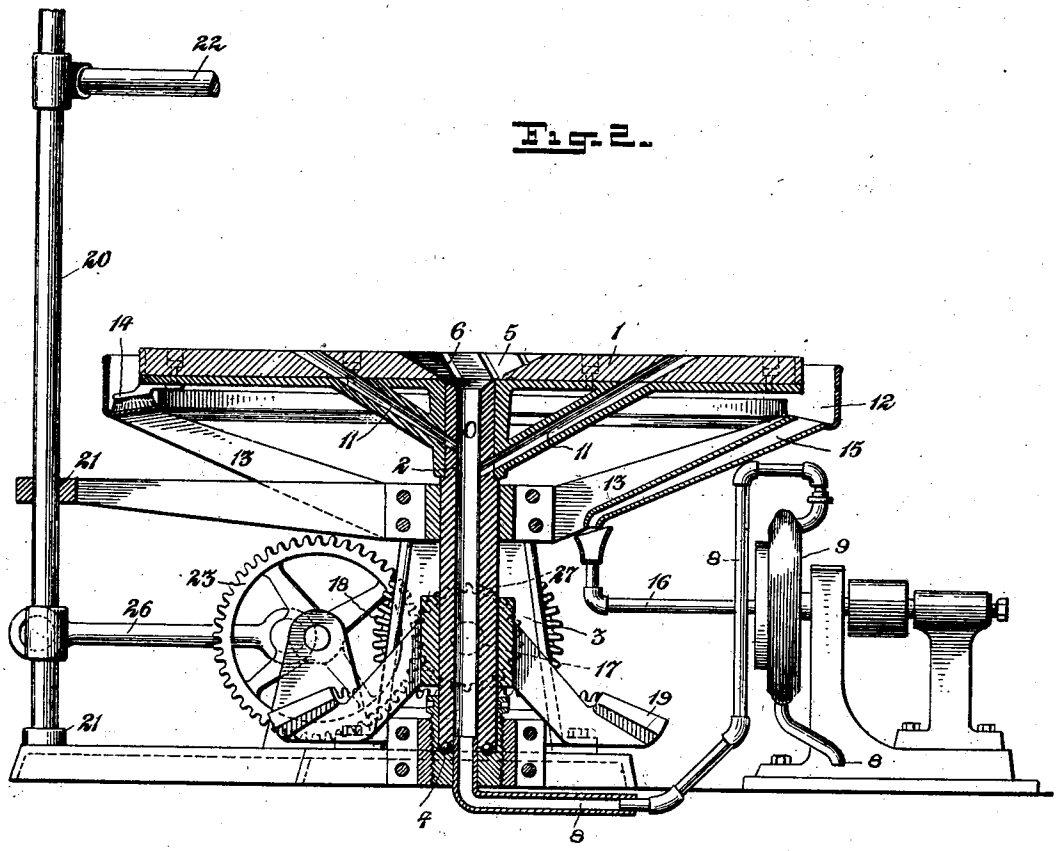
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Fig. 2.



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UNITED STATES PATENT OFFICE.

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STONE GRINDING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 696,195, dated March 25, 1902.

Application filed February 27, 1901. Serial No. 49,079. (No model.)

To all whom it may concern:

Be it known that I, ISAAC N. ROGERS, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Stone Grinding and Polishing Machines, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention relates to improvements in stone grinding and polishing machines, and has particular reference to the means for feeding the water and shot or other grinding medium into operative position on the surface of the grinder-disks for grinding and cutting the stone, the main object of my invention being to improve machines of the character referred to by automatically feeding the grinding medium into operative position on the surface of the grinder-disks from a point below the same and independent of the position of the stone being operated upon and thereafter automatically conducting the grinding medium as it passes off the disks back to a position to be again fed into operative grinding position on the surface of the disks, whereby the grinding medium will be repeatedly used in connection with such additional amount as is required until worn out. Such object I secure by means of the new and novel features of construction and combinations of parts, as hereinafter set forth in detail, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a plan view of a machine embodying my invention, and Fig. 2 is a vertical cross-section through line 2 2 of Fig. 1 looking in the direction indicated by the arrow.

In said drawings, 1 1 indicate two horizontally-arranged grinder-disks, each of which is mounted on a vertically-arranged rotary shaft 2, which shafts are journaled in a suitable frame or casting 3, with their lower ends resting upon ball-bearings 4, as shown in Fig. 2.

The grinder-disks 1 1 in accordance with my invention are each provided with a central opening or perforation 5, from which extend a series of radial or diverging grooves 6, which terminate at a point adjacent to but inside the line of the periphery of the disks. This opening 5 and the connecting-grooves 6 are adapted to receive the grinding medium (which preferably consists of hardened-steel shot and water) and present the same in operative position upon the upper surface of the disks for grinding and cutting the surface of the stone presented to the same.

As a means for automatically feeding the grinding medium to its operative position upon the grinder-disks I form the rotary disk-carrying shafts 2 with a central opening or passage 7, extending therethrough, as shown in Fig. 2, and connect the lower end of the same through a pipe or conduit 8 with a suitable tank or receptacle, (not shown in the drawings,) in which the grinding medium is contained. At a suitable point in the said pipe or conduit 8 I place a pump 9, preferably of the centrifugal type, which operates to draw the grinding medium from the tank or receptacle and force the same through the conduit 8 and hollow shafts 2 to the central opening 5 of the disks and the several grooves 6 diverging therefrom. In this manner the grinding medium is continuously fed to and distributed over the surface of the disks and, being fed upward from below the surface, the latter is kept uniformly covered with the same regardless of the position of the stone being operated upon.

The outer ends of the grooves 6 being closed, as described, serves to retain the grinding medium therein and causes its discharge upon the upper surface of the disks, and, furthermore, as said grinding medium is thus forced through the grooves to a position projecting above the surface of the disk a cutting edge is thereby formed at each groove for acting upon and grinding the surface of the stone presented to it. In order to prevent the grooves 6 from becoming clogged or choked up with the grinding medium, I have formed the same at an angle, as clearly shown in Fig. 2, whereby said grinding medium may be more readily forced therethrough under pressure.

To insure an increased distribution of the grinding medium over the surface of the disks, passages 11 are provided, which communicate with the hollow shafts 2 at a point below their upper end and extend upwardly at an angle to the upper surface of the disks at different points thereon, as shown.

As the grinding medium passes off the edge of the disks in the operation of the machine it is received into annular troughs 12 12, which are supported below the disks and independent thereof upon arms 13 of the frame 3, as shown in Fig. 2. Brushes 14, secured on the lower edge of the rotary grinder-disks, move in the said troughs and carry the grinding medium received therein to an outlet pipe or passage 15, through which latter it passes to a pipe 16, connecting with the pump, and is drawn by the latter therethrough and then forced back to the surface of the disks, in the manner as hereinbefore described.

Thus the grinding medium may be repeatedly used until worn out or useless, while such additional material as is required and may be forced through the conduit 8 will be drawn from the supply tank or receptacle.

The grinder-disks may be operated to receive their rotary movement by any suitable means, the means as herein shown consisting of a horizontally-arranged driving-shaft 17, which is journaled in suitable bearings in the frame 1 and provided with a beveled gear 18 at each end thereof, meshing with like gears 19 on the vertical disk-shafts 2, as shown. It will also be understood that any suitable means may be employed for moving the stone being operated upon back and forth over the grinder-disks, one simple means being as follows: A vertically-arranged post or shaft 20 is journaled in suitable bearings 21 21 at one side of the disks and provided with a laterally-extending arm 22, which is provided with a forked end (not shown in the drawings) for engaging with the usual chain which supports the stone. This post or shaft 20 is operated to receive an oscillating movement and thereby vibrate the outer end of its arm 22, so as to communicate a reciprocating movement to the stone by means of a crank-wheel 23, which is provided with a crank-pin 24, having connection with an arm 25 of the shaft 20 through the medium of a connecting-rod or pitman 26, the latter having a universal-joint connection with the parts 24 and 25, as more clearly shown in Fig. 1, so as to allow for the different paths of movement of such parts. The crank-wheel 23 in the present instance shown is provided with teeth on its periphery, which mesh with a gear 27 on the driving-shaft 17, to be actuated therefrom.

Having thus set forth a practical embodiment of my invention, it will be understood that the same may be more or less materially modified without departure from the invention; also, that the machine may be employed with only one of the grinder-disks, for

What I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination, of a horizontally-disposed rotary grinder-disk provided with a series of radial grooves on its upper surface having closed outer ends, means for feeding a grinding medium to said disk, and means for actuating the disk.

2. In a machine of the character described, the combination, of a horizontally-disposed rotary grinder-disk provided with an opening extending therethrough and with a series of connecting radial grooves on its upper surface having closed outer ends, means for feeding a grinding medium to said disk, and means for actuating the disk.

3. In a machine of the character described, the combination, of a rotary grinder-disk provided with a series of radial grooves having closed outer ends, said grooves being angular in cross-section, means for feeding a grinding medium to said disk, and means for actuating the disk.

4. In a machine of the character described, the combination of a rotary grinder-disk provided with a central opening and a series of connecting radial grooves, a feed-conduit connecting with said central opening in the grinder-disk, a conduit connecting said feed-conduit with the grinder-disk at a point between its center and periphery, means for feeding a grinding medium through said feed-conduit, and means for actuating the grinder-disk.

5. In a machine of the character described, the combination, of a rotary grinder-disk, a feed-conduit communicating with the surface of said grinder-disk, means for automatically feeding the grinding medium through said feed-conduit, means for receiving the grinding medium as it passes off the grinder-disk and conducting the same to a position to be acted upon by the feeding means and again fed thereby to the grinder-disk, and means for actuating said grinder-disk.

6. In a machine of the character described, the combination, of a rotary grinder-disk, a feed-conduit communicating with the surface of the grinder-disk, means for automatically feeding a grinding medium through said feed-conduit, a trough for receiving the grinding medium as it passes off the grinder-disk, an outlet-conduit for conducting the grinding medium from said trough to a position to be acted upon by the feeding means and again fed thereby to the grinder-disk, means carried by the grinder-disk for forcing or carrying the grinding medium in the trough to the outlet-passage therein, and means for actuating the grinder-disk.

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Witnesses:
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