M. A. EATON.

MACHINE FOR SHAPING SHARPENING STONES.

APPLICATION FILED MAR. 15, 1920.

1,377,119.

Patented May 3, 1921.

2 SHEETS—SHEET 1.

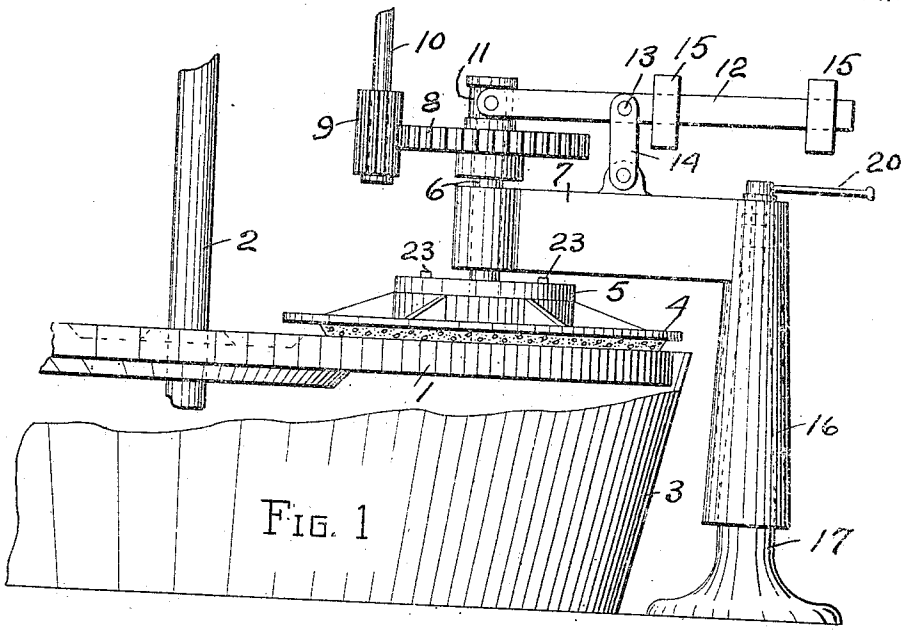


FIG. 1

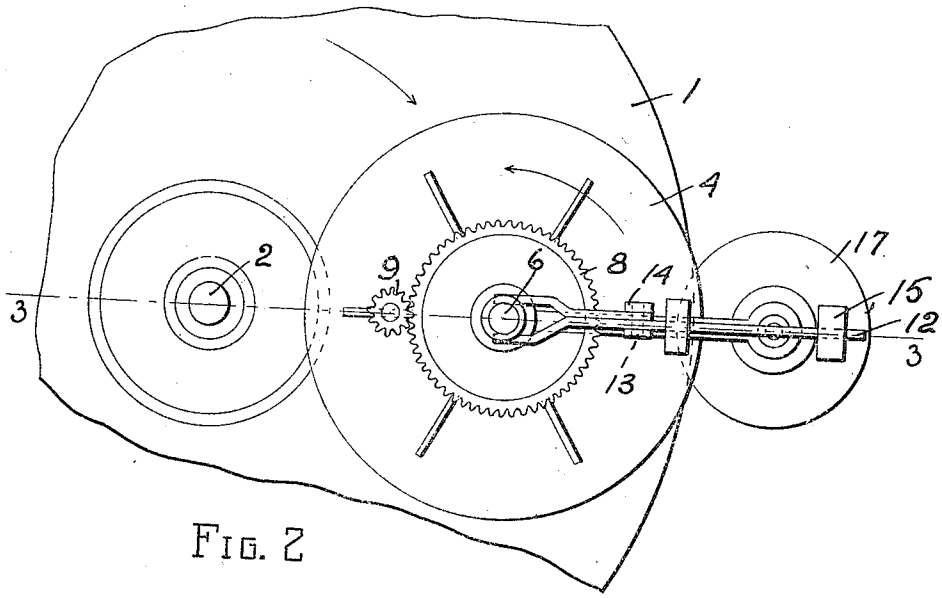


FIG. 2

Inventor

Malvern A. Eaton

By A P Greeley

Attorney

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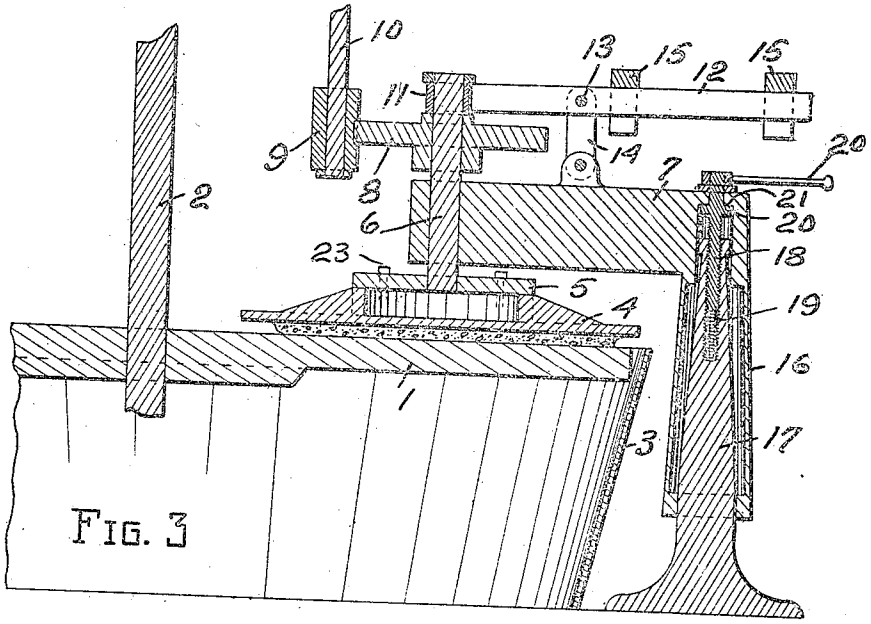


FIG. 3

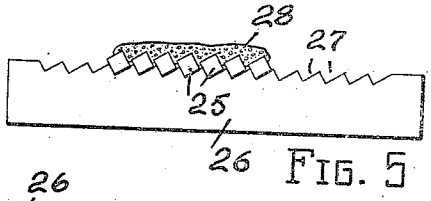


FIG. 5

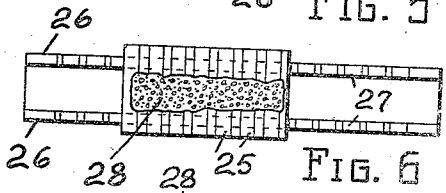


FIG. 6

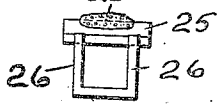


FIG. 7

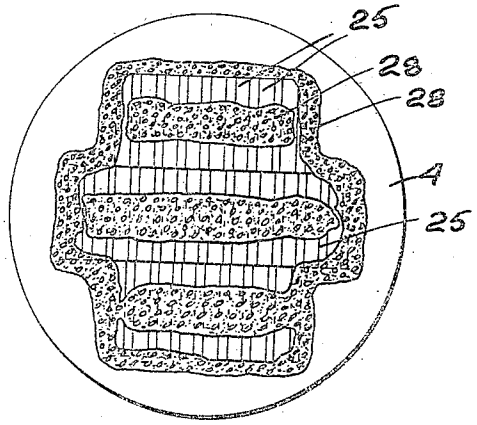


FIG. 4

Inventor

Malcom A. Eaton

By A. P. Brown

Attorney

UNITED STATES PATENT OFFICE.

MALVERN A. EATON, OF LITTLETON, NEW HAMPSHIRE, ASSIGNOR TO PIKE MANUFACTURING COMPANY, OF PIKE, NEW HAMPSHIRE, A CORPORATION OF NEW HAMPSHIRE.

MACHINE FOR SHAPING SHARPENING-STONES.

1,377,119. Specification of Letters Patent. Patented May 3, 1921.

Application filed March 15, 1920. Serial No. 365,868.

To all whom it may concern:

Be it known that I, MALVERN A. EATON, a citizen of the United States, residing at Littleton, in the county of Grafton, State of New Hampshire, have invented certain new and useful Improvements in Machines for Shaping Sharpening-Stones, of which the following is a description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to grinding machines for shaping sharpening stones and like articles by grinding and relates particularly to machines for this purpose by which sharpening stones rectangular in cross section may be ground to a shape in cross section other than rectangular, such as wedge shape or knife shape or triangular, and has for its object to provide a machine for this purpose which will so shape a considerable number of stones simultaneously to the particular shape in cross section desired, which will be comparatively simple and inexpensive in construction and operation and will permit of ready insertion of the work into the machine and ready removal of the work therefrom.

With the above described objects and other objects hereinafter explained in view my invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings;

Figure 1 is a side view partly broken away of a grinding machine embodying my invention,

Fig. 2 is a plan view of the machine shown in Fig. 1,

Fig. 3 is a vertical sectional view of the machine on line 3—3 of Fig. 2,

Fig. 4 is a bottom plan view of the work carrying disk,

Fig. 5 is a side view of the assembling device for assembling the stones to be ground to shape,

Fig. 6 is a top plan view of the assembling device shown in Fig. 5, and

Fig. 7 is an end view of the same.

In the drawings 1 indicates a grinding disk preferably of cast iron carried by and rotating with vertical shaft 2 and arranged to be supplied with sand or other finely divided abrasive and water in any convenient manner. 3 indicates a pan below the grinding disk and having its upper edge surrounding the disk to receive the sand and water overflowing its edge. 4 indicates a work carrying disk removably secured to a disk 5 carried on the lower end of a vertical shaft 6 journaled in an arm 7 and provided above the arm with a gear 8 adapted to mesh with a pinion 9 carried by a vertically arranged power shaft 10. The shaft 6 is arranged to be capable of a limited vertical movement in its bearing in the arm 7 and has near its upper end an annular collar 11 with which engages the forked end of a lever 12 which is pivoted at 13 to the upper end of a link 14 which, at its lower end, is pivoted on the arm 7, the lever 12 carrying near its free end one or more weights 15. The arm 7 is carried on the upper end of a cone shaped sleeve which fits over and is journaled on a cone shaped standard 17. Within the arm 7 above and in line with the axis of the standard 17 is a screw 18 which engages screw threads 19 formed in the upper end of the standard 17, the screw 18 extending through the upper surface of the arm 7 and being there provided with a handle 20 for rotating it. On the screw 18 within the arm 7 and bearing against a shoulder 21 is a ring 22 so arranged that on rotating the screw the arm 7 may be raised to lift the work carrying disk sufficiently to raise the stones carried by it out of contact with the grinding disk. The pinion 9 is made sufficiently long to permit considerable vertical movement of the arm 7 and the parts carried by it without having the gear 8 get out of mesh with the pinion. Bolts 23 serve to secure the work carrying disk 4 to the disk 5.

The stones to be ground are of rectangular shape in cross section as they come from the sawing machines as indicated at 25 and in order to be ground to a shape other than rectangular in cross section are cemented to the work carrying disk 4 in such a way that an edge will be presented to the action of the disk. In order to thus present them they are first assembled on the devices shown in Figs. 5, 6 and 7, these devices consisting of a pair of side strips 26 suitably spaced apart and provided on their upper edges with a series of accurately formed notches 27 which are so shaped as to hold the stones at the angle desired. When the stones are

assembled on these devices a quantity of cement 28 is placed upon their middle portions between and out of contact with the side strips 26. The block of stones thus formed is, with other blocks similarly formed, placed on the under face of the work carrying disk 4 which for this purpose is removed from the machine and inverted, and secured thereon by cement 28. When the cement is sufficiently hard the work carrying disk with its attached stones is turned over and is secured to the disk 5, the arm 7 being swung away from the grinding disk to permit this to be done. The arm 7 is then swung back into position to bring the work carrying disk over the grinding disk and is lowered by the screw 18 so as to bring the stones into contact with the surface of the disk. As the arm 7 is thus swung back into operating position the gear 8 is brought into mesh with the pinion 9 and power being applied to the shaft 2 and the shaft 10, the grinding disk operates to grind away first the cement which projects below the edges of the stones and then to grind away the material of the stones. The weight of the disks 4 and 5 with the shaft 6 and gear 8 in addition to the weight of the stones presses the stones against the grinding disk sufficiently to insure the necessary grinding action and, in fact, is ordinarily more than sufficient for this purpose and requires to be counterbalanced to a greater or less extent. This counterbalancing is effected by the adjustment of the weight or weights 15 on the lever 12.

The rotation of the work carrying disk on one center while the grinding disk rotates on a different center insures equal grinding on all the stones.

While as above described the work carrying disk is a flat disk to which the articles to be ground are secured by cement, it is obvious that other forms of work holders, such for instance as holders in which sharpening stones or other articles to be shaped by grinding may be secured by clamps or other holding means, may be substituted for the work carrying disk and the articles to be ground may be arranged in such holders or on the work carrying disk shown for grinding sides, faces or ends at right angles to each other.

It should be understood that I do not desire to be limited to the details of construction shown and described it being obvious that many changes in details may be made without departing from the spirit of the invention.

Having thus described my invention what I claim is:—

In a machine for shaping articles by grinding, the combination with a grinding disk rotating on a vertical axis, of a conical standard outside the periphery of the grinding disk, a conical sleeve mounted to rotate on said standard, an arm carried by the sleeve adapted to swing over the grinding disk, a screw extending into the head of the standard adapted to raise the arm, a shaft journaled in the arm, and a work holder carried by the shaft.

In testimony whereof I affix my signature this fourth day of March 1920.

MALVERN A. EATON.