

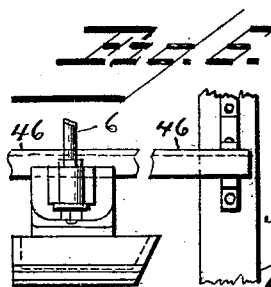
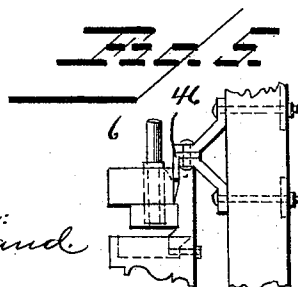
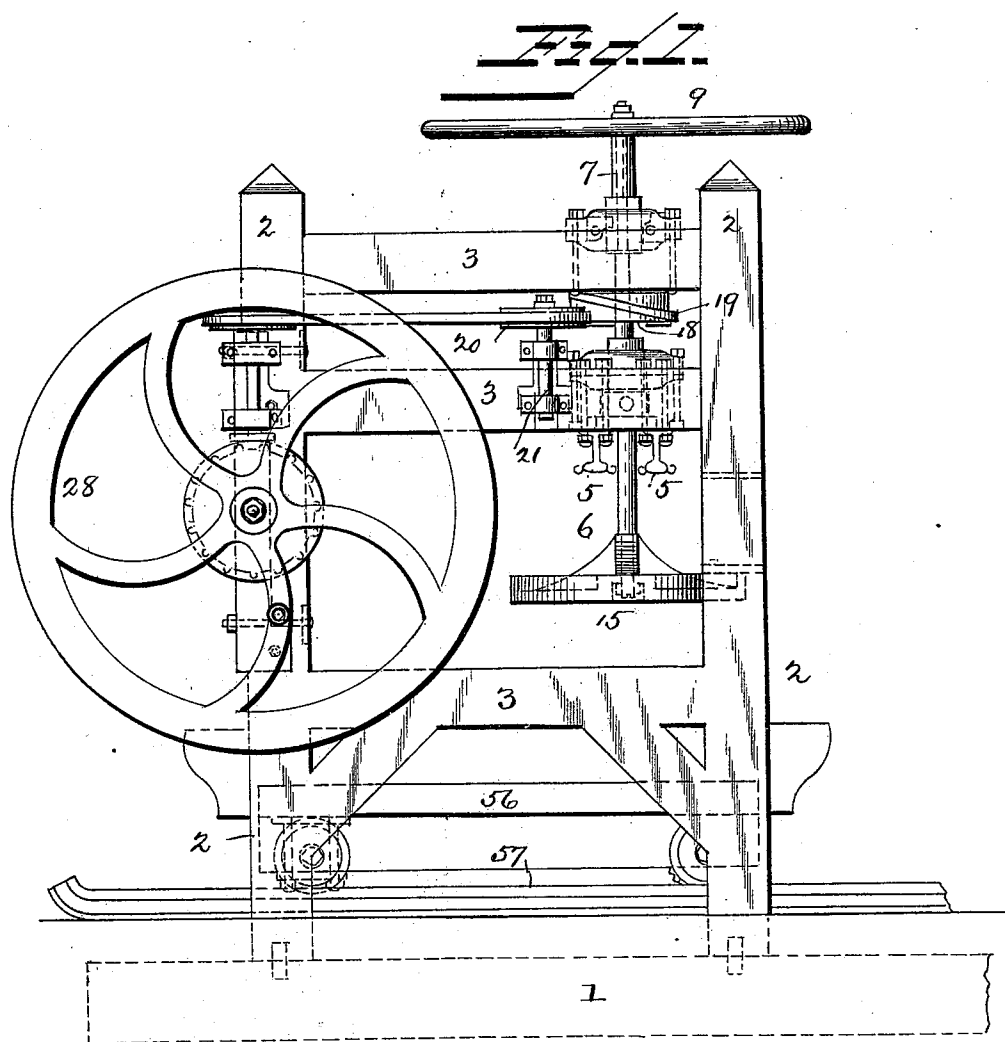
(No Model.)

4 Sheets—Sheet 1.

N. P. OSTBERG.
STONE DRESSING MACHINE.

No. 512,317.

Patented Jan. 9, 1894.



Witnesses:
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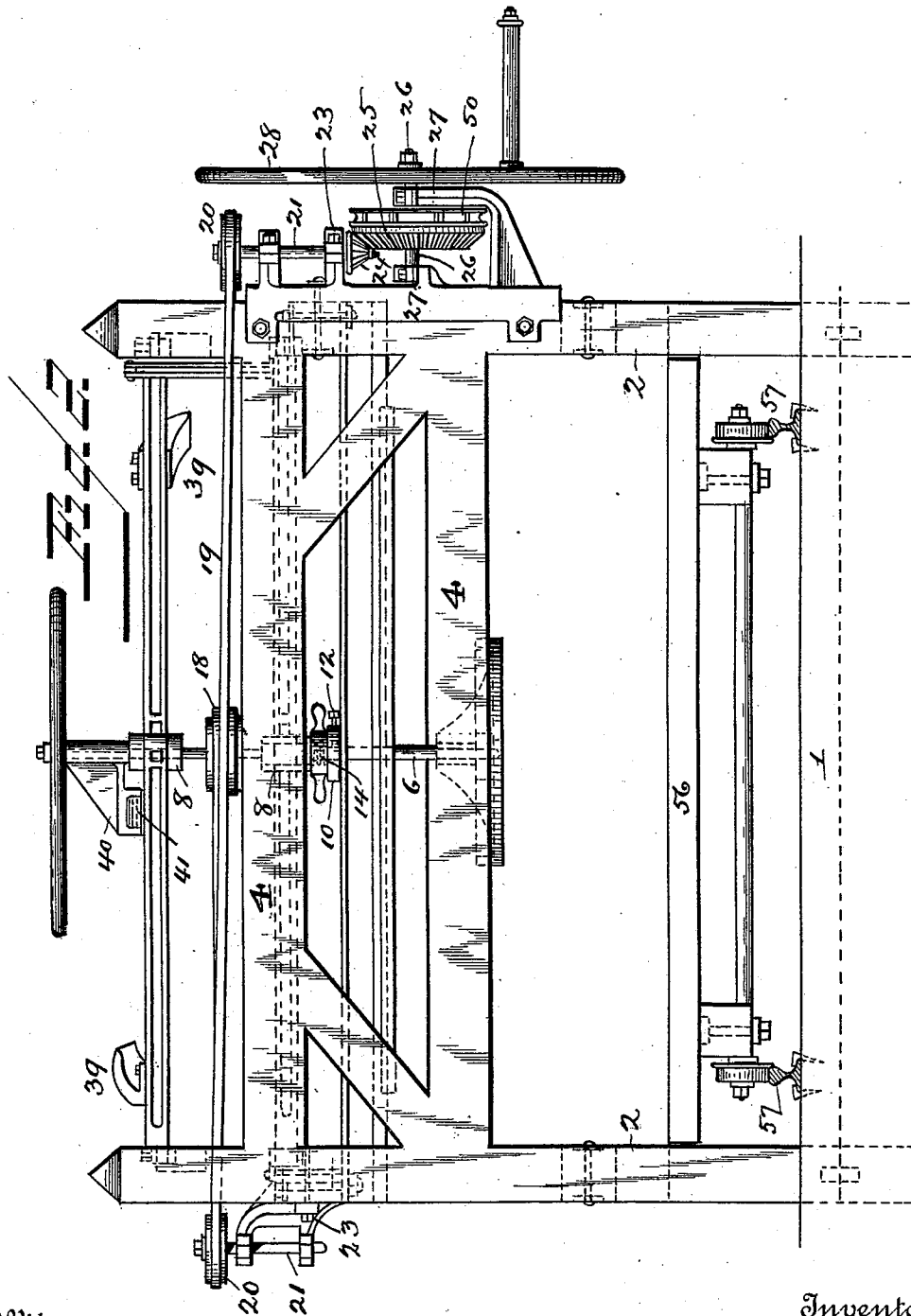
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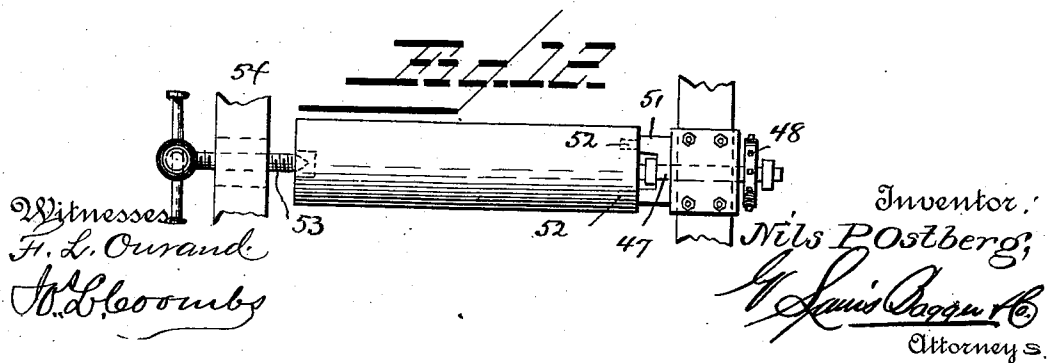
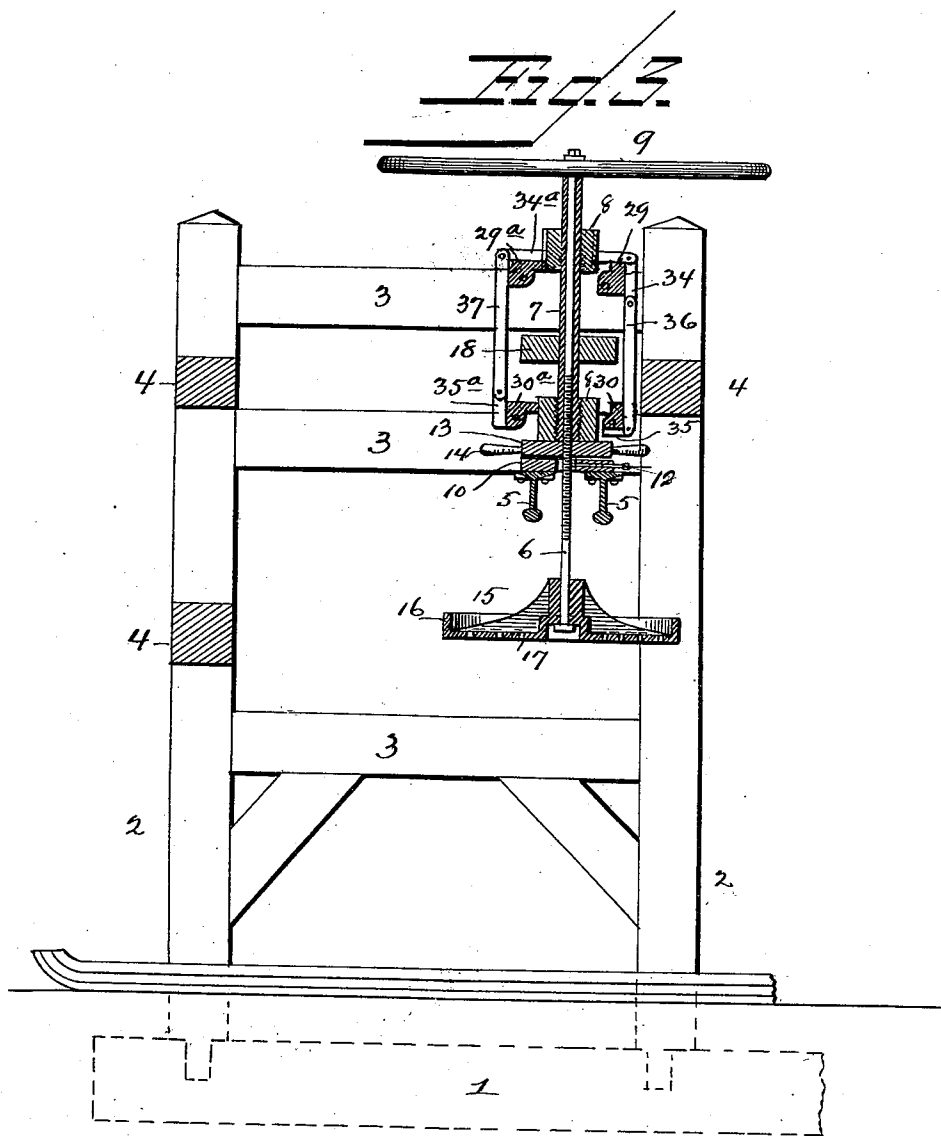
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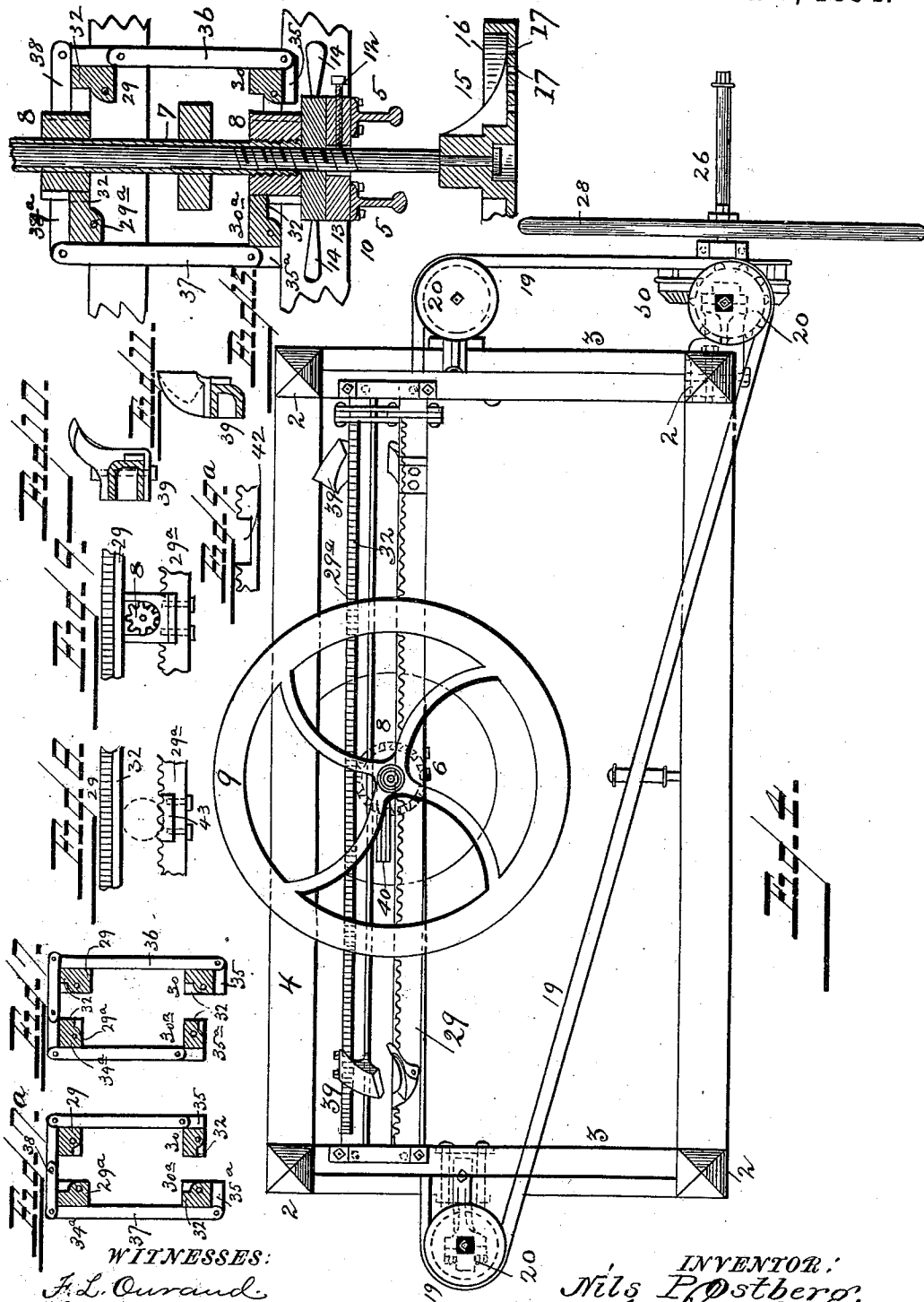
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4 Sheets—Sheet 4.

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STONE DRESSING MACHINE.

No. 512,317.

Patented Jan. 9, 1894.



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UNITED STATES PATENT OFFICE.

NILS PETTER OSTBERG, OF LUND, SWEDEN.

STONE-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 512,317, dated January 9, 1894.

Application filed April 24, 1893. Serial No. 471,683. (No model.) Patented in Sweden August 11, 1892, No. 3,890.

To all whom it may concern:

Be it known that I, NILS PETTER OSTBERG, a subject of the King of Sweden and Norway, and a resident of Lund, in the Province of Skåne and Kingdom of Sweden, have invented certain new and useful Improvements in Stone-Dressing Machines, (for which I have obtained Letters Patent of the Kingdom of Sweden, No. 3,890, dated August 11, 1892;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in machines for grinding and polishing stone work, such as steps, table-tops, monuments, columns, and other like articles, as well as straight beaded and molded work, and it consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings: Figures 1 is a side elevation of a machine constructed in accordance with my invention, showing the same adapted for grinding and polishing flat surfaces or articles. Fig. 2 is a front view of the same. Fig. 3 is a central vertical cross-section of the same, showing the same adapted for grinding and polishing cylindrical articles. Fig. 4 is a plan view. Figs. 5 and 6 are detail views showing the form of grinding head or block used in grinding and polishing molded or beaded articles, and the guide for the same. Figs. 7 and 7^a are detail sectional views of the oscillatory racks and the means for actuating the same. Figs. 8 and 9 are detail views of the racks and the pinions for moving the shaft carrying the grinding or polishing blocks laterally across the machine, showing the manner of throwing the pinions in and out of gear. Fig. 9^a is a detail of one of the racks showing the recess. Figs. 10 and 11 are detail sectional views, showing the curved lugs by which the racks are oscillated. Fig. 12 is a detail plan view showing the manner of securing a rotatable cylindrical column or object to be ground or polished. Fig. 13

is a detail sectional view, on an enlarged scale of the means for raising and lowering the vertical shaft.

In the said drawings, the reference numeral 1 designates the base of the machine, to which is secured at each side, uprights 2 connected together by top and bottom and intermediate side bars 3, which are preferably made of metal and cast integral. The uprights are also connected together at the front and rear by transverse plates or bars 4.

Bolted to the under sides of the intermediate bars 3 are two parallel transverse rails 5, separated a short distance from each other forming a space for the passage of the vertical shaft 6, the lower half of which is screw-threaded while its upper half is square or angular in cross section and fitting in a correspondingly shaped bore in a sleeve or hollow shaft 7, provided with two fixed pinions 8, the purpose of which will be hereinafter explained. At its upper end it is also provided with a fly-wheel 9.

Loosely mounted on the shaft 6 is a collar 10, which rests upon the rails 5, and is provided with a set-screw 12 by which it may be secured thereto. Between the collar and the lower pinion 8, is a screw-nut 13 provided with handles 14 by which it may be rotated. At the lower end the shaft 6 carries a grinding disk 15 provided with an annular upwardly projecting flange 16, at its edge forming a receptacle for water and sand which escapes through perforations 17 in the bottom onto the surface to the ground.

Intermediate of the pinions 8, the sleeve or hollow shaft 7 is provided with a pulley 18, around which passes an endless belt 19. This belt also passes over pulleys 20 fixed to vertical shafts 21, journaled in brackets 23, secured to the uprights. At its lower end one of these shafts is provided with a bevel pinion 24, which meshes with a bevel gear 25, fixed to a short horizontal shaft 26, journaled in bearings 27, secured to one of the uprights. This shaft is also provided with a fly-wheel 28, and may be driven by hand or power. When said shaft is rotated through the connections above described, the hollow shaft and the vertical shaft 6, will also be rotated. As the latter

shaft is not positively connected with said hollow shaft it can move up and down therein, as will be hereinafter set forth.

Aligned horizontally with each of the pinions 8, are two parallel rack-bars 29, and 29^a and 30, 30^a, one in front and one in rear of each pinion, provided with rack-teeth 32. These rack-bars are journaled in bearings in the uprights and are so arranged and connected together, that when the teeth of the two bars on one side of the pinions are in a vertical position, so as to engage or mesh with the pinions, the teeth of the two other bars on the opposite side will be in a horizontal position and out of engagement with the pinions. These rack-bars are connected together by means of a yoke consisting of lugs 34, 34^a and 35, 35^a secured respectively to bars 29, 29^a and 30, 30^a, and pivotally connected together by means of vertical bars 36 and 37 and a horizontal link 38 pivoted to the lugs of the upper bars.

By reference to Fig. 7 it will be seen that lugs 34 and 34^a occupy positions at right angles to each other, while lugs 35 and 35^a are in similar positions with respect to each other. In this figure, the teeth of bars 29^a and 30^a are shown in position for engagement with the pinions, while the teeth of bars 29 and 30 are turned up horizontally so as to be out of mesh therewith. If one of the said bars be turned a quarter of a revolution, the teeth of bars 29 and 30 will be turned down into a vertical position to engage with the pinions and bars 29^a and 30^a turned similarly to disengage their teeth, as seen in Fig. 7^a.

To each of the upper bars 29 and 29^a at opposite ends, is secured a curved lug 39, which is adapted to be struck by a revolving arm 40 carried by the hollow shaft 7, when said shaft reaches the ends of the machine, whereby the rack-bars are oscillated.

For the purpose of reducing friction between the arm and lugs, the former is provided with a roller 41, which engages with the lugs. It is obvious that said hollow shaft may be provided with two arms 40 if desired, and the lower rack-bars also provided with lugs 39.

For some descriptions of work, the said shafts 6 and 7 should not traverse across the machine, but remain stationary, so far as lateral movement is concerned. To permit of this I provide the following means: The rack-teeth of the bars 29, and 30, or 29^a and 30^a are interrupted at or near the centers forming a recess 42 at or near the center, to receive a removable plate 43 formed with a series of teeth corresponding with said rack-teeth. When the plate is bolted to the bars the rack teeth will be continuous from end to end, so that the pinions can engage therewith, and the shafts 6 and 7 traverse the machine. When, however, it is desired to have the shafts rotate without moving laterally, the plate 43 is removed, and a plate 45,

without teeth, is substituted therefor, which forms a bearing for the pinion which will freely rotate therein.

In some descriptions of work, notably for beaded or molded articles, the grinding block or head should not rotate with the said shafts, but move laterally to and fro across the machine. In this case the said block or head should be pivotally connected with shaft 6, so that the latter will rotate without rotating the blocks, a transverse guide 46 being secured to the uprights which engages against one side of the block to aid in preventing rotation thereof.

For grinding and polishing cylindrical articles, I provide one of the side bars of the frame with a rotatable shaft 47, provided with a sprocket-wheel 48, connected by means of a chain 49 with a sprocket-wheel 50 on shaft 26. The inner end of shaft 47 is provided with a head 51, having studs 52 which project into holes in the article to be ground. The opposite end of the said article is formed with a central hole in which fits the point of a screw 53, working through a bar 54.

In operation the article is revolved in contact with the grinding block as will be well understood.

The numeral 56 designates a work support- ing carriage traveling on rails 57, secured to the base.

In grinding articles the work is placed upon the carriage and run underneath the grinding block. By now rotating the screw-nut the shaft 6 and grinding block are depressed until the latter comes in contact with the work. As further downward movement of said block and shaft 6 is now prevented, a further turn of said nut will cause it and the hollow shaft and its pinions to be slightly elevated so as to throw said nut and the loose collar out of contact, whereby all the weight is thrown upon the grinding block. By now starting the machine in operation the hollow shaft, and the grinding block will be rotated, and at the same time by reason of the pinions engaging with the rack-bars, will be caused to traverse the machine. When said parts have reached one side, the roller 41 of the arm 40 will strike the lug 39 at that end turning the rack-bars one quarter of a revolution, throwing the pinions out of mesh with the bars and throwing the teeth of the opposite bars into engagement therewith, so that the shafts will be moved in a reverse direction. In polishing articles, however, the weight should be supported by the collar which rests on the rails 5. In this case the grinding block is removed from shaft 6, and a polishing block substituted therefor. The work is now run under said block, as before, and the shaft 6 depressed by means of the screw-nut. Just as the polishing block comes in contact with the work, the collar is secured to the shaft by means of the set-screw 12, to prevent further movement of the shaft, and the nut still further turned so as to press

firmly upon the collar. The set-screw is then loosened, and the machine set in motion as before stated.

Having thus described my invention, what I claim is—

1. In a stone grinding and polishing machine, the combination with the frame, the parallel rack bars journaled therein arranged in pairs with the teeth of one bar of each pair at right angles to the other bars, the rotatable shaft having pinions adapted to engage with said teeth, substantially as described.

2. In a stone grinding and polishing machine, the combination with the frame, the rack-bars journaled therein arranged in pairs with the teeth of one bar of each pair at right angles to the teeth of the other bar, and the pivotal yoke connecting said bars together, of the rotatable shaft and the pinions carried thereby adapted to engage with said teeth, substantially as described.

3. In a stone grinding and polishing machine, the combination with the frame, the rack-bars journaled therein, arranged in pairs

one above the other, with the teeth of the bar of one pair at right angles with the teeth of the other bar, the pivotal yoke connecting said bars together and the curved lugs at opposite ends of said bars, of the rotatable shaft, the pinions carried thereby and the arm fixed to said shaft, adapted to engage with said lugs, substantially as described.

4. In a stone grinding and polishing machine, the combination with the frame, the rotatable shaft carrying the grinding or polishing head, and the hollow rotatable shaft provided with pinions, of the connected rack-bars pivoted in said frame, having recesses adapted to receive removable and interchangeable plates, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

NILS PETTER OSTBERG.

Witnesses:

TRULS PEHRSSON,
ALFRED GULLBERG.