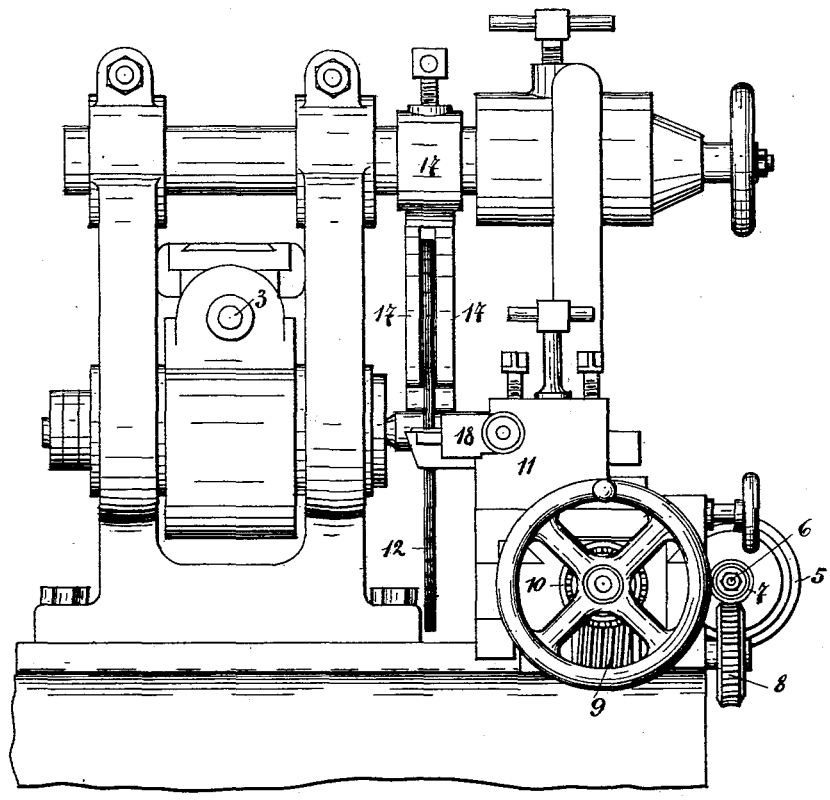
(No Model.) 2 Sheets—Sheet 1.

J. G. ULMANN.

MACHINE FOR PRODUCING METAL SHAVINGS.

No. 573,728. Patented Dec. 22, 1896.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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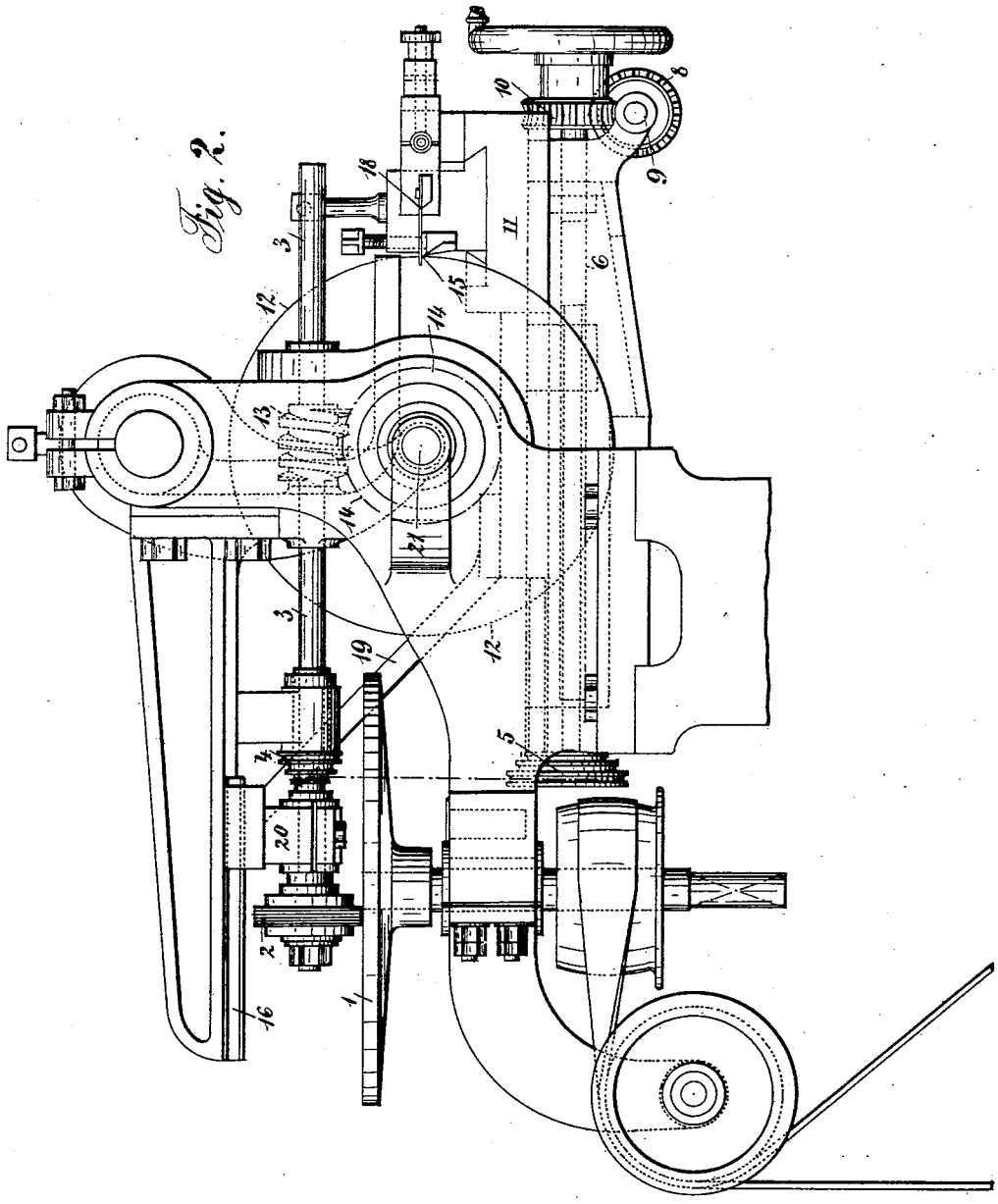
Fig. 2.



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UNITED STATES PATENT OFFICE.

JACQUES GOETSCHEL ULMANN, OF ZURICH, SWITZERLAND.

MACHINE FOR PRODUCING METAL SHAVINGS.

SPECIFICATION forming part of Letters Patent No. 573,728, dated December 22, 1896.

Application filed April 29, 1896. Serial No. 589,548. (No model.)

To all whom it may concern:

Be it known that I, JACQUES GOETSCHEL ULMANN, a citizen of the Swiss Republic, residing at Zurich, in the canton of Zurich, Switzerland, have invented certain new and useful Improvements in Machines for Producing Metal Shavings for Use in Cleaning and Polishing Inlaid Floors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in machines for producing metal shavings for use in cleaning and polishing inlaid floors and similar surfaces; and it consists in the improved machine hereinafter described and claimed, whereby the shavings are turned off from the periphery of circular layers of steel plates whose thicknesses correspond to the desired width of the shavings. These plates are held by suitable means and rotated with their peripheries constantly in contact with a cutter, which, by means of suitable mechanism, is advanced constantly, so that at each revolution of the package of plates the cutter will have advanced a distance equal to the thickness of the shavings to be cut. As the radii of the plates decrease the speed of the rotation thereof is increased proportionately in order to keep their peripheral speed uniform, as will be hereinafter described.

In the accompanying drawings, which illustrate a machine constructed in accordance with my present invention, Figure 1 represents a front elevation of the machine, and Fig. 2 represents a side elevation of the same.

Similar numerals refer to similar parts throughout both views.

The friction-disk 1 is mounted upon the end of a shaft suitably journaled in the frame of the machine and driven by any suitable means, as by a belt passing over a pulley on said shaft. The friction-disk 1 imparts motion to a friction-disk 2, which is set at right angles thereto and makes contact with its upper face, as shown in Fig. 2. The friction-disk 2 is mounted rigidly upon the end of a shaft 3, mounted in suitable journal-bearings and provided with step-pulleys 4 for driving a belt therefrom. A worm 13 is also mounted upon this shaft 3 and meshes with and rotates a worm-wheel 14, mounted on the shaft 21, which latter shaft rotates the metal plates 12, suitably held thereby. Another step-pulley 5 is mounted upon a shaft 6, journaled in the frame of the machine, and is adapted to be driven by a belt from the step-pulley 4 on the shaft 3. A worm 7 is mounted upon the opposite end of the shaft 6 from the step-pulley 5 and meshes with a worm-wheel 8, mounted upon a short shaft carrying the worm 9, which in turn meshes with the worm-wheel 10. This latter moves a support 11 similar to the ordinary lathe-carriage, in which the cutter 15 is mounted. The support 11 is rigidly connected with a slide 20 on the shaft 3, working on a guide 16, by means of an arm 19.

The bifurcated guides 17 serve as side supports for the metal plates and prevent sidewise movement of the same during the cutting operation. A plate 18, secured to the support 11 above the cutter 15, prevents the piling up of the shavings as they are turned off from the peripheries of the disks.

The operation of the machine is as follows: The disk 1 being rotated in the proper direction, the motion thereof is communicated to the shaft 3 by means of the friction-disk 2, and the worm 13 on the shaft 3 thus being rotated motion is communicated to the shaft 21 through the worm-wheel 14, mounted thereon, and thus the plates 12 are rotated. Motion is at the same time communicated to the shaft 6 by means of a belt passing over the step-pulleys 4 and 5 and through the worm 7, mounted on said shaft, to the worm-wheel 8, worm 9, driven thereby, and to the worm-wheel 10, which advances the sliding support 11, in which the cutter is mounted. The sliding support 11 also pushes the slide 20, mounted on the shaft 3, forward, causing the friction-pulley 2 to move away from the center of the disk 1 and thus increase the speed of the shaft 3 and consequently the speed of the shaft 21, which rotates the plates 12, as also the speed of the shaft 6 through the step-pulleys 4 and 5, and so on through the worm 7, worm-wheel 8, worm 9, and worm-wheel 10, back to the sliding support, which is being constantly pushed gradually forward. A complete cycle of movements is thus obtained.

It will be seen that as the plates become

smaller and the sliding support 11 approaches the center thereof the friction-disk 2 will be moved farther away from the center of the friction-disk 1, thus constantly increasing the speed of the friction-disk 2 and the parts driven thereby.

The relative speeds of the shafts 3 and 6 may be varied by shifting the belt from one step to another on the pulleys 4 and 5, and thus the speed with which the support 11 is fed forward may be regulated, and thereby the thickness of the shavings varied at will.

Any number of these machines may be driven together from a common source in battery form.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine for the production of metallic shavings, the combination with a mandrel for holding the package of plates, mounted in a suitable frame, and a worm-wheel on said mandrel; of a driving-shaft mounted in said frame and capable of rotation and movement in the direction of its axis simultaneously; a worm on said shaft meshing with the worm-wheel on said mandrel for rotating said mandrel; a friction-disk mounted in said frame and driven at a uniform speed; a second friction-disk mounted upon said shaft and driven by said first friction-disk for rotating said shaft; a sliding cutter-support mounted in said frame; a second shaft journaled in said frame and driven by said first shaft; a worm on said second shaft, and worm-gearing driven thereby for advancing said sliding cutter-support; an arm having a guideway thereon rigidly mounted on said frame; a sliding block mounted on said guideway and provided with a bearing for said driving-shaft; and a rigid arm connecting said sliding block to said cutter-support, for moving said driving-shaft axially, and thus causing the friction-disk thereon to move across the face of the other disk, and increasing the speed of rotation of said shaft, substantially as described.

2. In a machine for the production of metallic shavings, the combination with a mandrel for holding the package of plates, mounted in a suitable frame, and a worm-wheel on said mandrel; of a driving-shaft mounted in said frame and capable of rotation and movement in the direction of its axis simultaneously; a worm on said shaft meshing with the worm-wheel on said mandrel for rotating said mandrel; a friction-disk mounted in said frame and driven at a uniform speed; a second friction-disk mounted upon said shaft and driven by said first friction-disk for rotating said shaft; a sliding cutter-support mounted in said frame; a second shaft journaled in said frame; gearing between said second shaft and said driving-shaft for varying the uniform speed of the former relative to the speed of the latter; a worm on said second shaft, and worm-gearing driven thereby for advancing the said cutter-support; an arm having a guideway thereon rigidly mounted on said frame; a sliding block mounted on said guideway and provided with a bearing for said driving-shaft; and a rigid arm connecting said sliding block to said cutter-support, whereby said sliding block is caused to move with said cutter-support, and increase the speed of rotation of the driving-shaft, substantially as described.

3. In a machine for the production of metallic shavings, the combination with a mandrel for holding the package of plates, mounted in a suitable frame, a worm-wheel on said mandrel, and a bifurcated guide for said package of plates, of a driving-shaft mounted in said frame and capable of rotation and movement in the direction of its axis simultaneously; a worm on said shaft meshing with the worm-wheel on said mandrel for rotating said mandrel; a friction-disk mounted in said frame and driven at a uniform speed; a second friction-disk mounted upon said shaft and driven by said first friction-disk for rotating said shaft; a sliding cutter-support mounted in said frame; a second shaft journaled in said frame and driven by said first shaft; means for varying the uniform speed of said second shaft relative to the speed of the first shaft; a worm on said second shaft, and worm-gearing driven thereby for advancing said sliding cutter-support; an arm having a guideway thereon rigidly mounted on said frame; a sliding block mounted on said guide and provided with a bearing for said driving-shaft; and a rigid arm connecting said sliding block to said cutter-support, for moving said driving-shaft axially, and thus causing the friction-disk thereon to move across the face of the other disk, and increasing the speed of rotation of said shaft, substantially as described.

In witness whereof I hereunto set my hand in presence of two witnesses.

JACQUES GOETSCHEL ULMANN.

Witnesses:
H. LABHART,
HERMANN SCHILLING.