

(No Model.)

3 Sheets—Sheet 1.

E. H. VOGEL.
GRINDING MACHINE.

No. 504,006.

Patented Aug. 29, 1893.

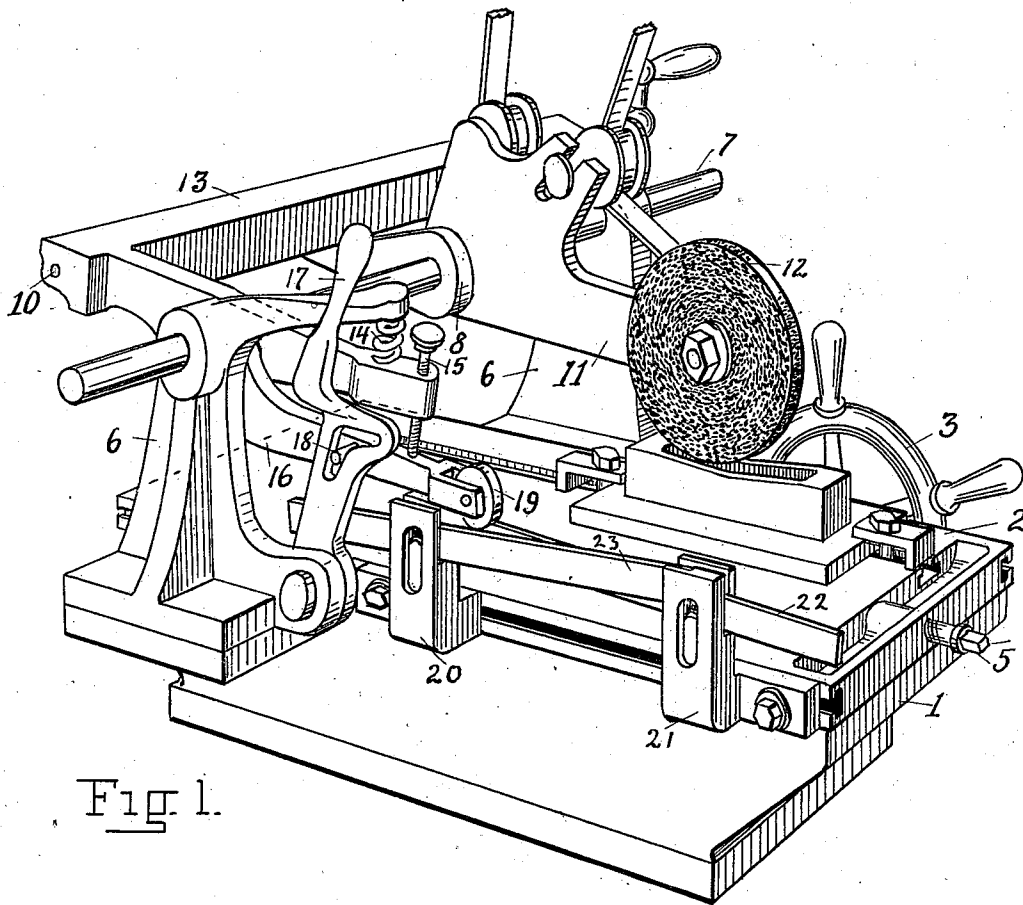


Fig 1.

Witnesses:

Charles L. Curtis
John H. Bennett

Inventor,
Ernest H. Vogel,
by *S. W. Balch*
his Attorney.

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3 Sheets—Sheet 2.

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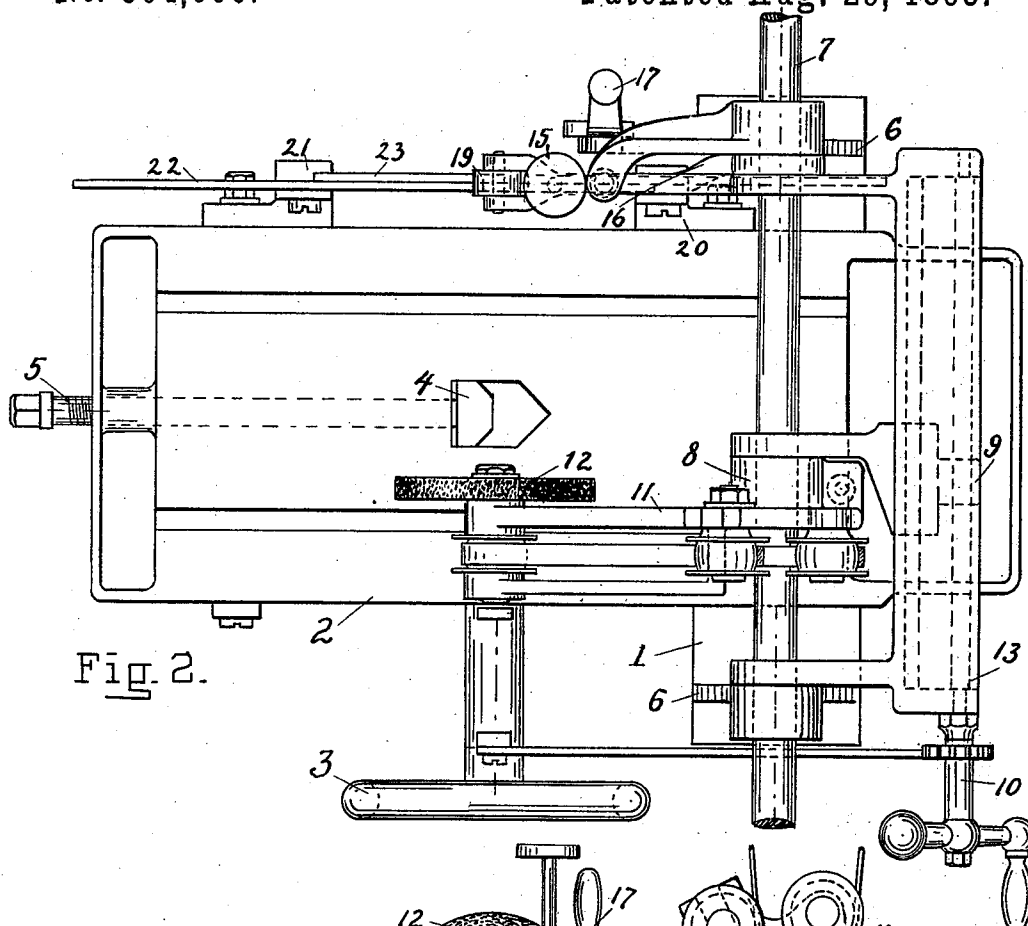


Fig. 2.

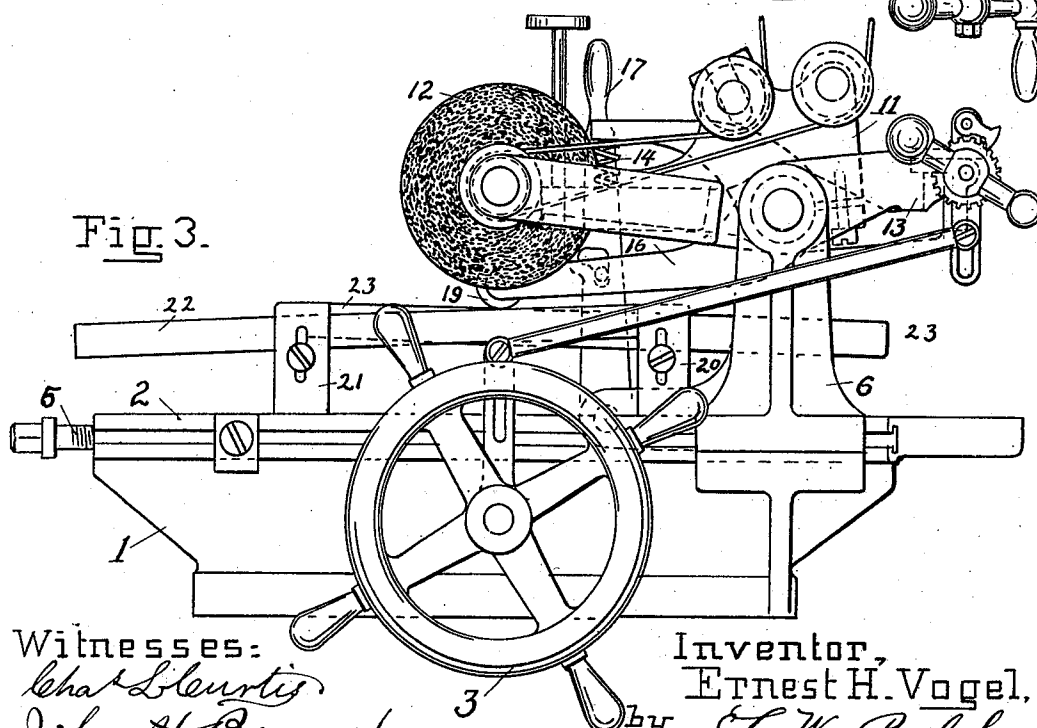


Fig 3.

Witnesses:

Chas Llewellyn
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His Attorney

(No Model.)

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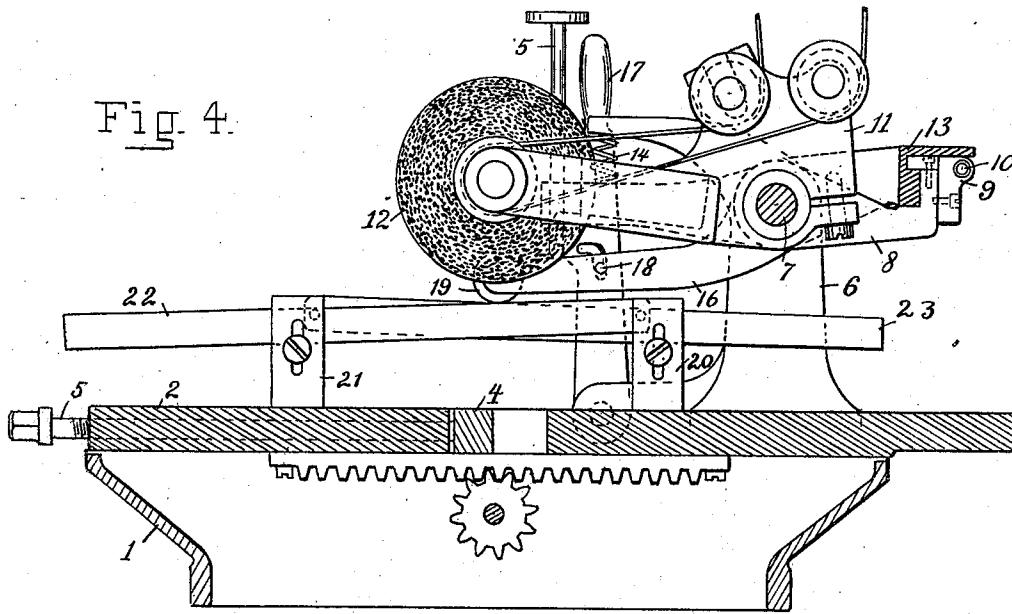
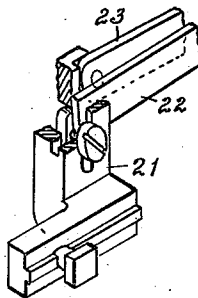


Fig. 5.



Witnesses:

Chas. L. Curtis
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Inventor,
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UNITED STATES PATENT OFFICE.

ERNEST H. VOGEL, OF NEW YORK, N. Y.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 504,006, dated August 29, 1893.

Application filed April 30, 1892. Serial No. 431,329. (No model.)

To all whom it may concern:

Be it known that I, ERNEST H. VOGEL, a citizen of the United States of America, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Grinding-Machines, of which the following is a specification.

My invention hereinafter more fully disclosed relates particularly to a machine for grinding oblique, convex, or concave surfaces on the ends of punches and the tops of dies used in cutting work from sheet metal in order to give them the requisite shear. My machine is also well adapted for ordinary surface grinding and polishing and is organized with movements for the work table and grinding wheel similar to those employed in metal working planers for the planer bed and tool holder.

In the accompanying two sheets of drawings, Figure 1 is a perspective view of my complete machine with a die fastened to the work table to be ground. Fig. 2 is a top view of the machine. Fig. 3 is an elevation from the opposite side from the perspective view. Fig. 4 is a vertical section through the machine, and Fig. 5 is a perspective view of one of the supports for my former.

On the base 1 of my machine a horizontal work table 2 is mounted so that it may be reciprocated by turning the wheel 3 back and forth through mechanism of the type commonly used for moving planer-beds. In this work table in addition to the customary T slots, I have provided an opening fitted with a jaw 4 movable by means of the screw 5. This serves as a vise to hold punches and similar objects of a cylindrical character in a perpendicular position while their ends are being ground. On either side of the work table are standards 6 6 bolted to the base, which support a rod 7. This rod can slide in the standards. On it is a sleeve 8 which has a projecting arm supporting the nut 9 which is carried by the feed screw 10. This sleeve is preferably tight on the rod so that the slip when it is moved by the feed screw will be between this rod and the standards since these are at a distance from each other and therefore are better guides. A frame 11 which is clamped to the sleeve carries the

grinding wheel 12 and two idlers over which the belt passes to and from the pulley on the grinding wheel spindle. Between the standards is a feed-screw frame 13. This supports the feed screw, guides the arm on the sleeve and hinges about the rod carrying the sleeve on which the frame for the grinding wheel is clamped. A spring 14 lies between a projecting arm from one of the standards, and a lever arm from the feed screw frame so as to press the grinding wheel against its work. The pressure of this spring is opposed by the screw 15 which rests against the arm 16, and serves as a fine adjustment for the height of the grinding wheel above the work table, in addition to the adjustment afforded by rocking the grinding wheel frame on the sleeve to which it clamps. The arm 16 can be supported in either of two ways. When ordinary surface grinding parallel to the work table is desired, the hand lever 17, Fig. 1 is pushed to the left so that the pin 18 is supported in the horizontal part of the notch in the other member. When curved or oblique grinding is desired, the hand lever is pushed in the other direction so that it affords no support for the arm 16. When this is done, this arm receives its support through its roller 19 which rests on an adjustable former supported on and carried by the work table. To this former I have given a novel construction. Two supports 20 21 clamp to the edge of the work table. Rails 22 23 are hinged, one to each support and clamp in a vertical slot in the other support at an adjustable height. By this construction I am enabled to give these rails an inclination in opposite directions and vary this inclination as desired. The roller 19 has sufficient width to lie above both rails and is supported by which ever occupies the higher position. When these are adjusted as shown in the drawings and the work table is reciprocated back and forth under the roller it will be vibrated up and down by them. This vibratory motion will be copied by the grinding wheel, and it will therefore grind the top of the work to two oblique surfaces as shown.

Without limiting myself to the precise details shown, what I claim, and desire to secure by Letters Patent, is—

1. In a grinding machine, a grinding wheel, a work table constructed to reciprocate beneath the grinding wheel, in combination with a grinding wheel frame, a rod rigidly attached thereto, and supporting standards in which the rod can rock and slide laterally, substantially as described.

2. In a grinding machine, a grinding wheel, a work table constructed to reciprocate beneath the grinding wheel, in combination with a grinding wheel frame, a feed screw frame, a feed screw for feeding said grinding wheel frame, a rod rigidly attached to said grinding wheel frame and supporting said feed screw frame, and standards in which the rod

can rock and slide laterally, substantially as described.

3. In a grinding machine a reciprocating work table, and a grinding wheel mounted above said table so that its distance therefrom may be varied, in combination with a frame supporting said grinding wheel, and a former supporting said frame for varying said distance, said former consisting of two rails adjustably inclined in opposite directions, substantially as described.

ERNEST H. VOGEL.

In presence of—

WM. H. PENROSE,
CHAS. L. CURTIS.