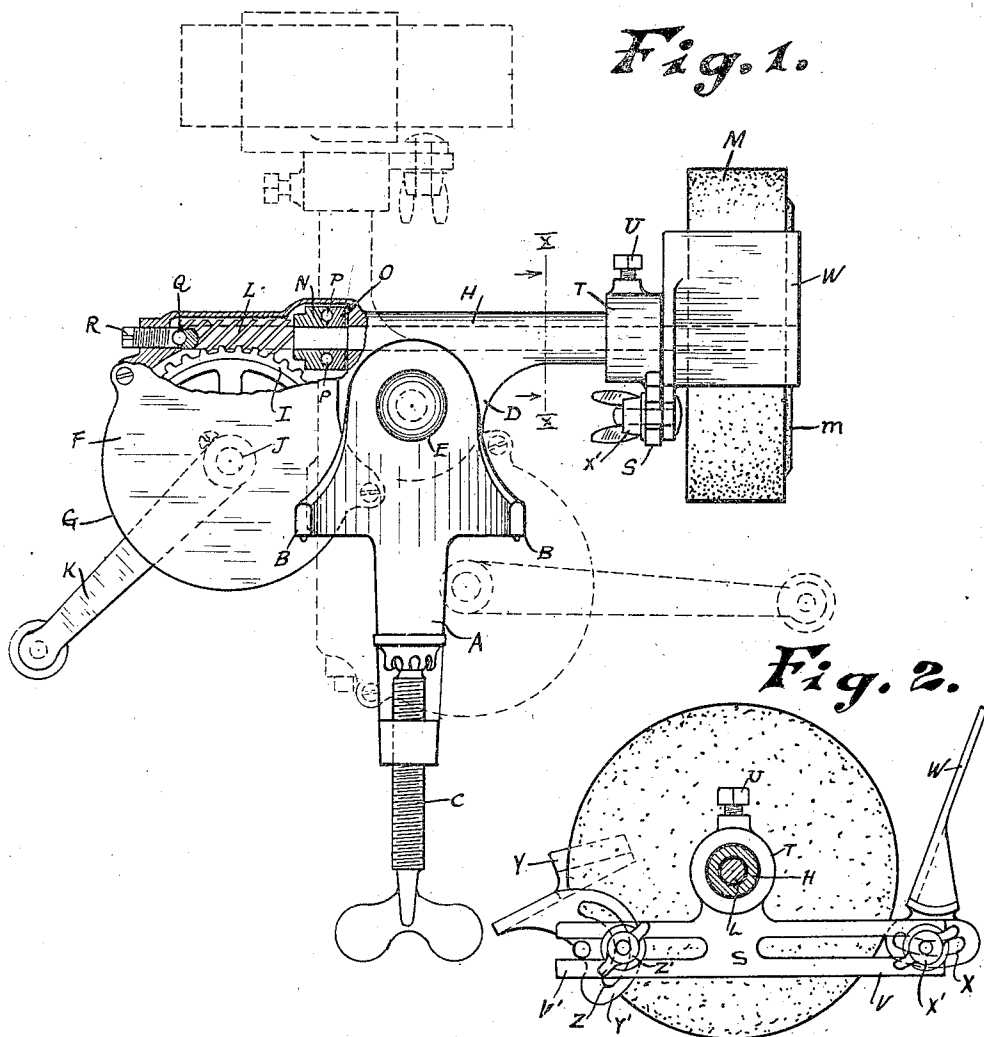


J. M. THOMPSON.  
GRINDING MACHINE.  
APPLICATION FILED JAN. 25, 1909.

994,216.

Patented June 6, 1911.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JAMES M. THOMPSON, OF MILWAUKEE, WISCONSIN.

## GRINDING-MACHINE.

994,216.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed January 25, 1909. Serial No. 474,000.

*To all whom it may concern:*

Be it known that I, JAMES M. THOMPSON, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Grinding-Machines; of which the following is a specification.

My invention relates to improvements in grinding machines.

The object of my invention is to provide a compact balanced structure with few parts, all securely housed and supported in a manner to prevent vibration, but capable of being rotatably adjusted about a central support to facilitate the application of tools to either the periphery or the flat surface of the grinding wheel.

A further object of my invention is to provide an improved adjustable tool rest, also balanced or substantially balanced upon the grinding wheel frame with tool holders at each end.

In the following description, reference is had to the accompanying drawings, in which—

Figure 1 is a view of a grinding machine embodying my invention as seen from the inner side. Fig. 2 is a detail sectional view, drawn on line *x-x* of Fig. 1, and looking toward the grinding wheel.

Like parts are identified by the same reference characters in both views.

A supporting member A is provided with clamping arms B and a clamping set screw C, whereby the device may be secured to a table or other suitable support. A casing is provided with a depending ear D which is pivotally secured to the supporting member by a bolt E, which, when loosened, permits the casing to swing pivotally on said bolt to the position indicated in dotted lines, the ear D being sufficiently offset laterally to permit this movement. The casing is provided with a cylindrical chambered portion G, having a removable side wall F, and a tubular portion H extending tangentially therefrom, and the ear D is preferably located in the angle formed by the portions G and H. A worm wheel I is mounted upon a shaft J in the portion G of the casing, and the shaft extends through the casing wall at one side and is provided with a crank K. The worm wheel I meshes with and drives a worm shaft L which is mounted in the tubular portion H and projects through the latter beyond the supporting member A, the

projecting end carrying a grinding wheel M. This worm shaft L is provided with a collar N, between which, and a shoulder O formed in the wall of the tubular portion H, a series of balls P are mounted to receive the end thrust. A single ball Q is interposed between the rear end of the worm shaft and a set screw R, which is screwed into the end of the portion H of the casing. A tool rest frame S is provided with an eye T encircling the tubular portion H of the casing near the grinding wheel, and adjustably secured thereto by a set screw U. This frame extends transversely of and below the shaft L and across the face of the grinding wheel and is provided with open ended slots V, V', to facilitate the application of tool rests of different character.

W is a flat plate or chisel rest provided with a member W' near one lower corner which is provided with a curved slot X and is secured to the frame by a clamping bolt X', which passes through the slots V and X. A knife rest Y, is provided with a similar member Y' having a curved slot Z through which, and the slot V', a clamping bolt Z' passes. The chisel rest extends upwardly substantially at a tangent to the surface of the grinding wheel, while the knife rest is supported in a position extending along one side of the grinding wheel.

In referring to the casing as balanced upon the support A, I do not mean that the parts are exactly balanced in weight, but that the parts are so proportioned that the weight of the grinding wheel and its gyroscopic stability when rapidly revolving, tends to counteract the operating pressure upon the crank, the machine having very little vibration and almost none of the tendency to work loose so common in clamped grinding machines.

The grinding wheel M is preferably provided with an outer facing *m* of finer material than that composing the body of the wheel, and this facing terminates within the periphery of the wheel so that it will not cause an uneven wear at the periphery. The tool is applied to this facing when completing the grinding operation if a smooth sharp edge is desired.

Having thus described my invention what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the described class, the combination with a grinding wheel

shaft provided with a worm thread, of a worm wheel for driving said shaft, provided with an operating crank, a casing inclosing the worm wheel and having a tubular extension inclosing a portion of the shaft, a grinding wheel on the projecting end portion of said shaft, and a support pivotally connected with the casing between the worm wheel and the grinding wheel.

2. In a machine of the described class, the combination with a grinding wheel shaft and grinding wheel, of a transverse driving crank shaft, gear connections between the crank shaft and grinding wheel shaft, and a pivotal support offset laterally from both shafts.

3. In a machine of the described class, the combination with a grinding wheel shaft and grinding wheel, of a supporting casing, driving gear mechanism in said casing, an exteriorly projecting driving shaft, and a supporting clamping member provided with a clamping bolt pivotally connecting said member with the casing at a point offset laterally from both shafts.

4. In a machine of the described class, the combination with a grinding wheel and a grinding wheel shaft provided with a worm

thread, of a worm wheel and transverse crank shaft for driving said shaft, a casing inclosing the worm wheel and a portion of the shaft, a set screw in said casing aligned with the shaft, a ball interposed between the set screw and shaft, a collar on the shaft, and a set of balls interposed between said collar and one wall of the casing.

5. In a machine of the described class, the combination with a grinding wheel and a grinding wheel shaft provided with a worm thread, of a worm wheel and transverse crank shaft for driving said shaft, a casing inclosing the worm wheel and a portion of the shaft, a set screw in said casing aligned with the shaft, a ball interposed between the set screw and shaft, a collar on the shaft, and a set of balls interposed between said collar and one wall of the casing, and a support adjustably connected with the casing at a point offset from both of said shafts.

In testimony whereof I affix my signature in the presence of two witnesses.

JAMES M. THOMPSON.

Witnesses:

O. R. ERWIN,  
LEVERETT C. WHEELER.