F. R. LUECK.

GRINDING MACHINE.

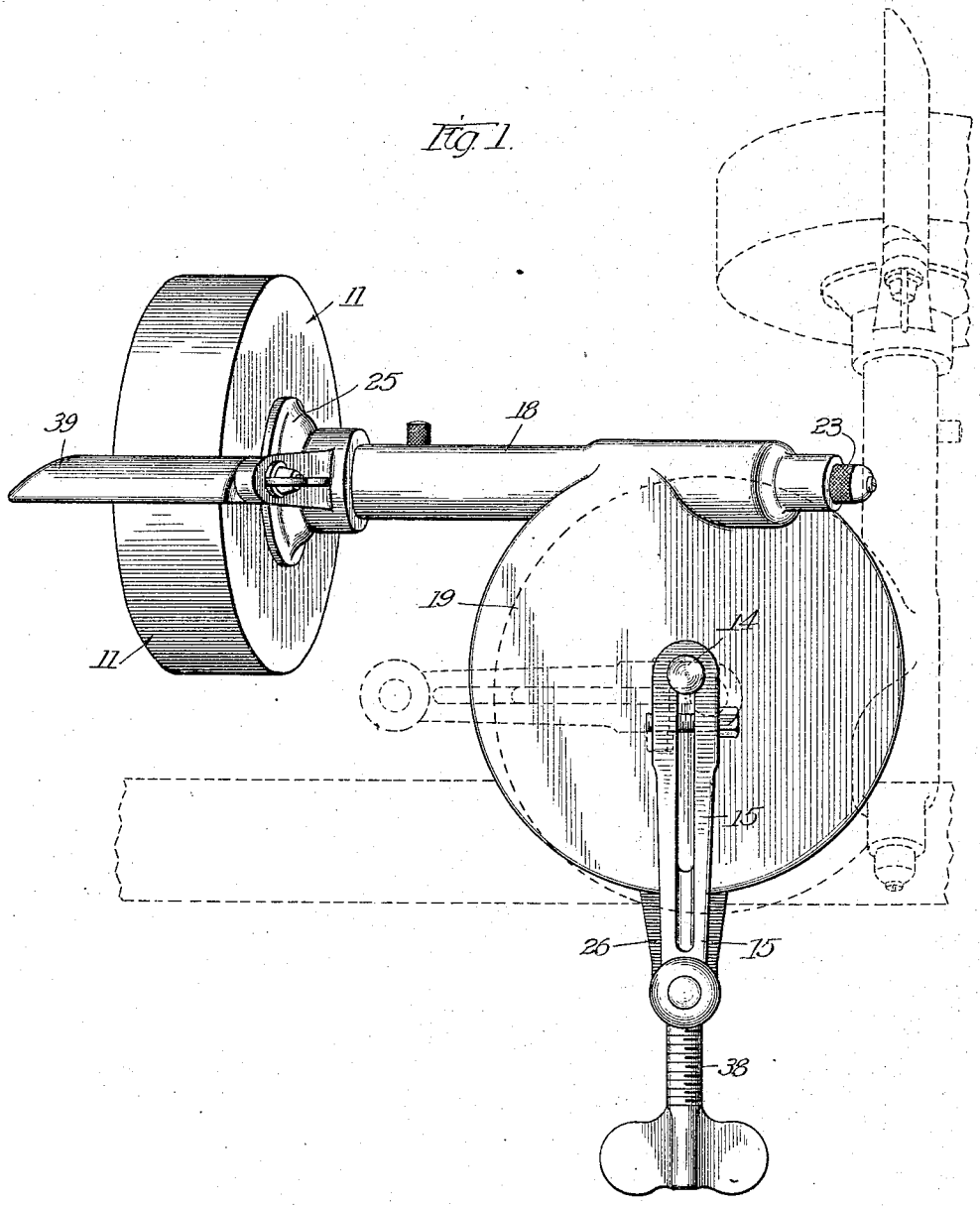
APPLICATION FILED SEPT. 4, 1913.

**1,185,591.**

Patented May 30, 1916.

2 SHEETS—SHEET 1.

Fig. 1.




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2 SHEETS—SHEET 2.

Fig. 2.

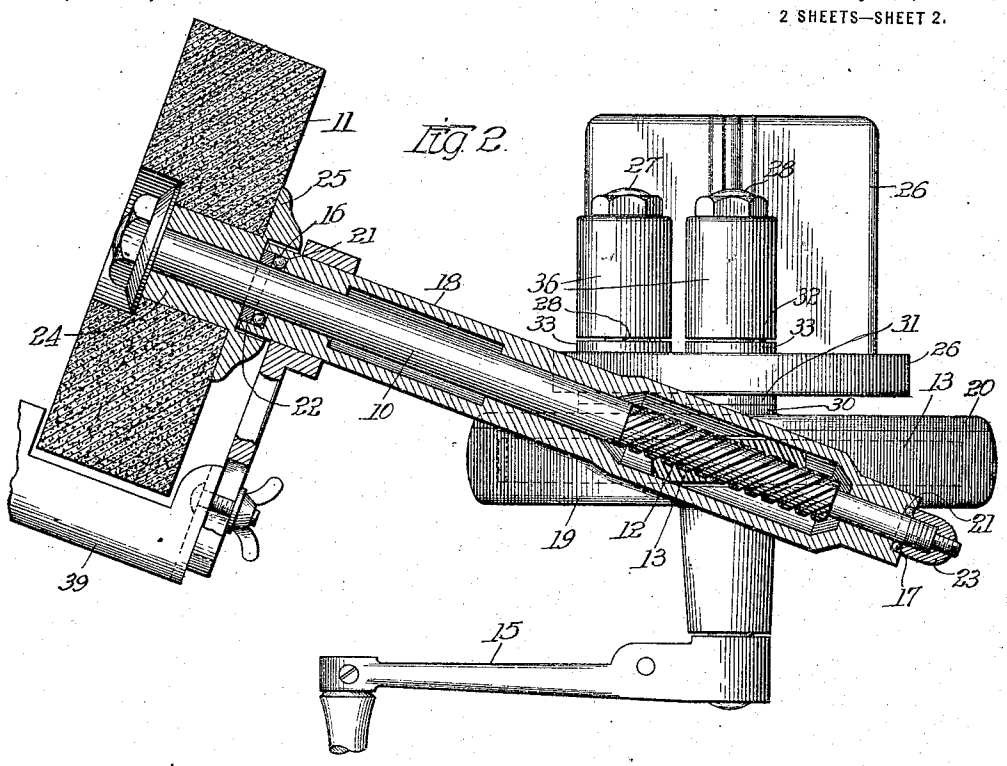



Fig. 3.

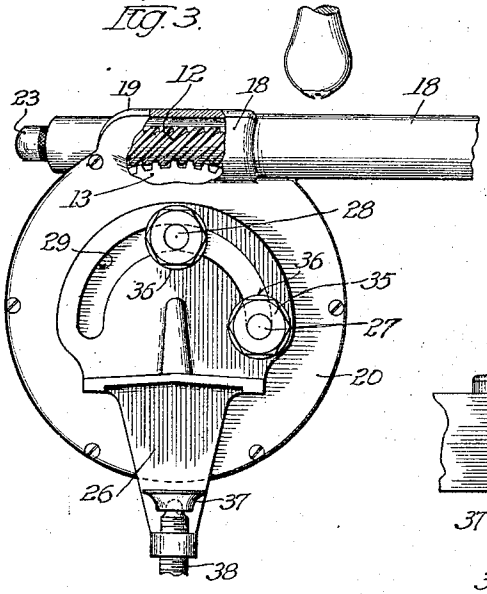
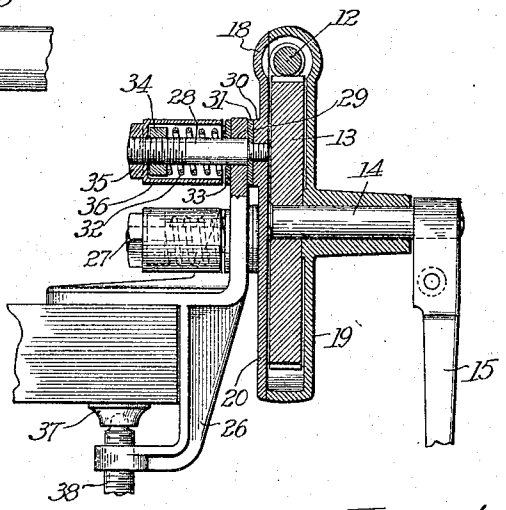



Fig. 4.




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# UNITED STATES PATENT OFFICE.

FRANK R. LUECK, OF MILWAUKEE, WISCONSIN.

## GRINDING-MACHINE.

1,185,591. Specification of Letters Patent. Patented May 30, 1916.

Application filed September 4, 1913. Serial No. 788,175.

*To all whom it may concern:*

Be it known that I, FRANK R. LUECK, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Grinding-Machines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in grinding machines.

An object of my invention is to provide a grinding or polishing machine having improved means whereby interference between the driving mechanism and the article held against the wheel will be avoided.

Another object of my invention is to provide a grinding or polishing machine with improved means whereby the grinding wheel may be easily adjusted to any desired position.

Another object of my invention is to provide a grinding or polishing machine having improved driving means and bearings.

The preferred embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is a horizontal section taken through the axis of the grinding wheel. Fig. 3 is a rear elevation partly in section. Fib. 4 is a vertical section taken centrally through Fig. 3.

The grinding machine has a shaft 10 which is provided with a suitable grinding wheel 11 at one end and a worm or screw 12 at the other. Meshing with the worm 12 is a helical gear 13, which is mounted on a spindle 14, having an operating handle 15 attached thereto. The grinding wheel shaft is disposed at an oblique angle to the spindle of the gear, so that the operation of the handle will not interfere with work held against the wheel. The shaft 10 of the grinding wheel is mounted on bearings 16, 17, in the tubular casing 18, which extends from the periphery of a circular housing 19 that incloses the gear wheel 13. One side of the housing is provided with a removably secured cover 20. Race-ways 21 are provided for the bearings 16 and 17 by counter-boring the ends of the casing. A follower 22 loosely mounted on the shaft holds the bearings 16 in place, while a cup-shaped nut 23, threaded on the end of the shaft, retains the bearings 17 in position. The grinding wheel is mounted on the shaft by means of a sleeve 24 having a protecting flange 25 that overhangs the outer end of the casing.

The grinding machine is adjustably secured to a supporting bracket 26 by means of pins 27 and 28 which are threaded into the cover 20 of the housing and project through the arcuate slot 29 formed in the bracket. The bases of the pins are surrounded by circular bosses 30. Friction washers 31, preferably of fiber, or other suitable material, are interposed between the bosses and the bracket. The outer ends of the pins are surrounded by adjustable coil springs 32 which bear against washers 33 on the outside of the bracket, and tend to draw the cover of the housing into firm contact with the bracket. Nuts 34 serve to adjust the springs 32, and are locked in position on the ends of the pins by lock nut caps 35, having projecting flanges 36 which form casings for the springs. The arcuate slot and the pins permit the turning of the housing to adjust the grinding wheel to any desired angle, and the springs and friction washers serve to hold it securely in the adjusted position. The slot and pins are preferably so arranged that when the pin 27 is in engagement with the adjacent end of the slot the axis of the grinding wheel will be substantially horizontal and when the housing is shifted so that the pin 28 engages the opposite end of the slot the axis of the grinding wheel will be substantially vertical. The supporting bracket 26 is provided with a clamping plate 37 and a clamping set screw 38 whereby the machine may be secured to any suitable support. Adjustably secured to the casing is a work rest 39.

Grinding or polishing machines as heretofore constructed have generally been arranged with the axis of the grinding wheel at right angles to the axis of the driving gear. This construction is objectionable for the reason that a tool or other article held against the wheel will extend so close to the path of movement of the operating handle as to interfere with the turning of the handle. Some machines have been constructed with the axis of the grinding wheel parallel to the axis of the driving wheel.

Such machines are open to the objection noted above, and in addition, are objectionable for the reason that they are difficult to operate, due to the awkward position of the operating handle with relation to the work.

By means of the invention herein described, the grinding or polishing wheel may be arranged at an oblique angle to the axis of the driving gear, so that tools or other articles to be ground may be held against the wheel without in any way interfering with the turning of the handle, and at the same time, the handle is in a convenient position for operation. These advantages are accomplished by a simple and compact machine, without employing either a friction or a flexible drive, and without a multiplicity of gear wheels.

The improved manner of mounting the grinding machine on its support permits the wheel to be readily shifted to any desired angle and to be securely held in its adjusted position without the necessity of loosening bolts or other fastening means.

While the operating mechanism herein described is particularly adapted for the operation of polishing or grinding wheels, it is to be understood that it may be used in the operation of various other tools and mechanisms.

The invention has been described in its preferred embodiment, but it is to be understood that many changes in details, proportions and arrangement may be made without departing from the scope of the invention as defined in the appended claims.

What I claim as new and desire to secure by United States Letters Patent is:—

1. In combination, a grinding or polishing wheel and a support therefor, said support being provided with yielding means whereby the wheel may be adjusted to a plurality of different positions, said means also serving to hold the wheel in any one of the adjusted positions.

2. In a machine of the class described, a grinding or polishing wheel, operating means therefor, a housing for said operating means, a bracket by which said housing is supported, and yielding means for holding said housing in contact with said bracket.

3. An adjustable grinding or polishing machine and means for supporting the same, said means including a supporting bracket, one of said elements being provided with a slot, the other element having a guide projecting therefrom, and means for yieldingly drawing said machine and support together, whereby said guide will maintain the machine in any one of a plurality of adjusted positions.

4. An adjustable grinding or polishing machine, a supporting bracket for said machine, said bracket being formed with a slot, a guide projecting from said machine through said slot, a friction surface interposed between said supporting bracket and machine, and means coöperating with said friction surface to yieldingly hold said machine in firm contact with said support, whereby the machine may be operatively secured in a variety of different positions.

5. In a machine of the class described, a grinding or polishing wheel, a shaft therefor, a worm on said shaft, a casing inclosing the shaft, bearings for said shaft, a helical gear meshing with the worm on said shaft, a handle for rotating said gear, a housing for said gear, said housing supporting said casing, a supporting bracket having a curved slot therein, a plurality of pins projecting from said housing through said slot, friction washers carried by said pins and interposed between the housing and bracket, and adjustable springs surrounding the ends of the pins, whereby the housing may be firmly secured in any adjusted position.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

FRANK R. LUECK.

Witnesses:
GEORGE A. AFFELDT,
ELSA CURSCHMANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."