

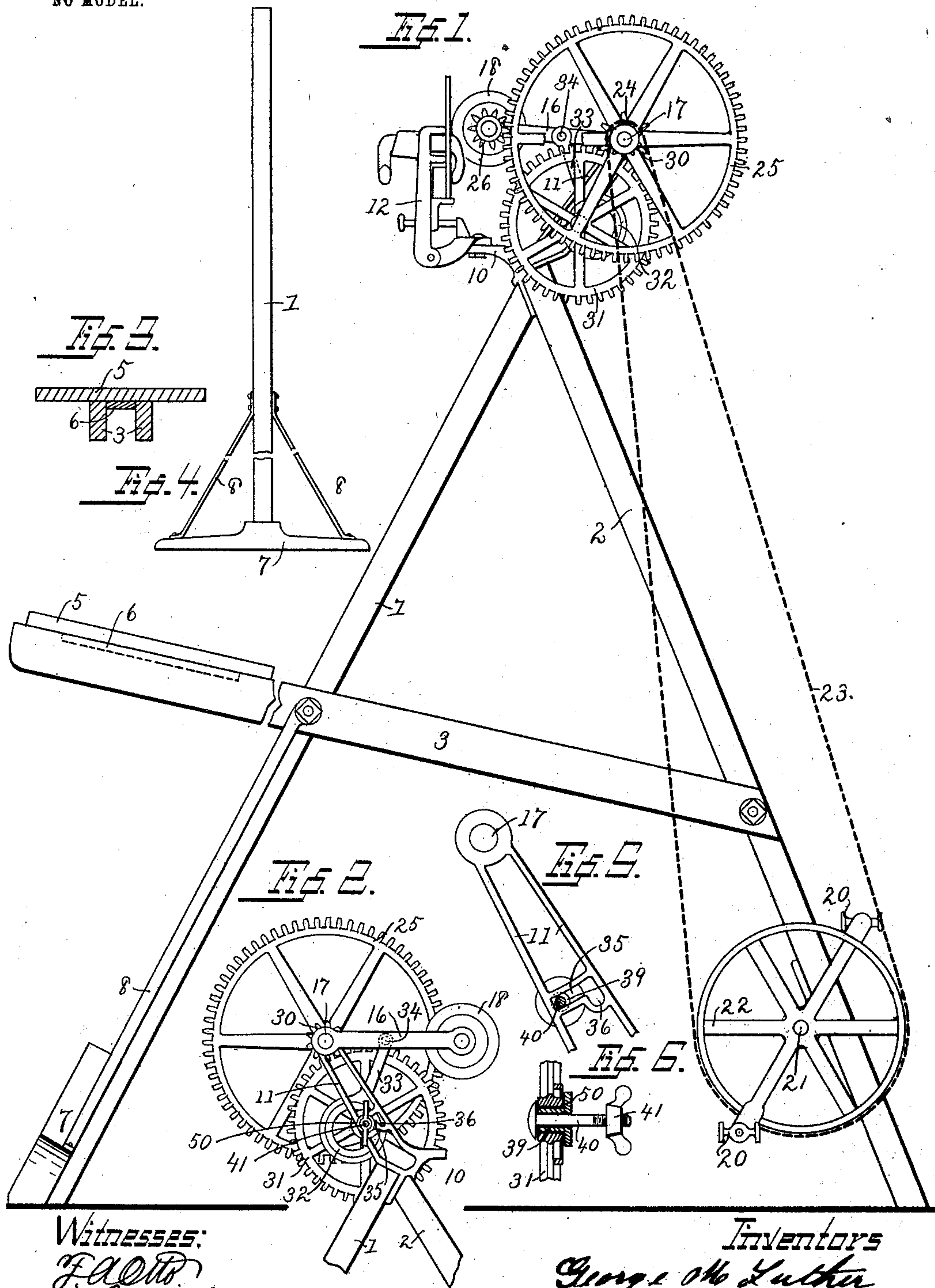
No. 719,678.

PATENTED FEB. 3, 1903.

G. M. & C. J. LUTHER.
GRINDING MACHINE.

APPLICATION FILED FEB. 7, 1901.

NO MODEL.



Witnesses:
F. A. Otto
C. L. Roesch

Inventors
George M. Luther
Charles J. Luther
By Edwin J. Whaley,
Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE M. LUTHER AND CLARENCE J. LUTHER, OF MILWAUKEE,
WISCONSIN.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 719,678, dated February 3, 1903.

Application filed February 7, 1901. Serial No. 46,304. (No model.)

To all whom it may concern:

Be it known that we, GEORGE M. LUTHER and CLARENCE J. LUTHER, citizens 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.

Our invention relates to improvements in grinding-machines, with especial reference to that class of machines which are used for grinding the sickles of mowers, reapers, &c., although the machines may be also used for other purposes, as hereinafter explained.

The objects of our invention are, first, to provide means for utilizing the foot-power in driving the machine, and, second, to provide means whereby the device can be adjusted to oscillate in different arcs, the same mechanism being also adapted to adjust the oscillating connections in inoperative position.

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

Figure 1 is a side elevation of our invention, showing the driving connections. Fig. 2 is an elevation of the opposite side, showing the adjusting mechanism. Fig. 3 is a cross-sectional view of the seat and its supporting-bars. Fig. 4 is a detail view of a T-shaped frame-bar adapted to furnish a lateral support for the entire device. Figs. 5 and 6 are detail views, respectively, of the bracket 11 and the bearings of gear-wheel 31.

Like parts are identified by the same reference-figures throughout the several views.

The frame of the machine is somewhat similar in form to a capital letter A, being composed of the angularly-disposed bars 1 and 2, united at their upper ends and diverging downwardly, with cross-bars 3 connecting the bars 1 and 2 at points between the ends of the latter. The bars 3 are preferably also angularly disposed—i. e., these bars are attached to the bar 1 at a higher point than that of attachment to the bar 2 and are extended beyond the bar 1 to form bearings for a sliding seat 5, which is provided with a cleat 6 on its under surface adapted to fit in the space between the bars 3, as best shown in Fig. 3.

The object of the sliding seat is to permit

an adjustment adapted to the length of the operator's legs, the driving connections being located at a point near the lower end of the bar 2. The lower end of the bar 1 is provided with the cross-bar 7, which rests on the surface of the ground or floor and furnishes lateral support for the machine.

8 represents braces connecting bar 1 and cross-bar 7.

Diverging arms 10 and 11, respectively, are secured to the upper ends of the bars 1 and 2, the arm 10 being provided with a sickle-rest 12. This sickle-rest is described and claimed in another application for Letters Patent of the United States, bearing even date herewith, filed February 7, 1901, Serial No. 46,303, and therefore need not be more particularly described herein, it being understood that for the purposes of this application any suitable sickle-rest may be employed.

An oscillatory carrier 16 is pivotally secured at 17 to the arms 11, and its free end is provided with a grinding-wheel 18. A rotary motion is communicated to the grinding-wheel from the pedals 20 through the crank-shaft 21, sprocket-wheel 22, chain 23, sprocket-pinion 24, gear-wheel 25, and pinion 26, the latter being fast on the shaft of the grinding-wheel. In order to oscillate the carrier 16, a reciprocating motion is communicated thereto from the gear-wheel 25 through the pinion 30, gear-wheel 31, eccentric 32, and arm 33, the latter having pivotal connection with a stud 34 on the carrier and being held thereon by the wheel 31, thus dispensing with a key.

It will be observed that the arm 11 is in the form of a bifurcated bracket having a curved slot or bearing 35 and a recess or notch at 36, preferably at one end of the slot. The slot is in an arc of which the axis of the pinion 30 is the center, and the gear-wheel 31 is mounted on a bearing-thimble 39, which is adapted to be clamped to the arm 11 by means of a bolt 40 and nut 41, the bolt passing through the thimble 39 and slot 35 or through the recess 36 when adjusted in the latter position. The head of the bolt holds the gear-wheel 31 on the thimble, and a flange 50 on the inner end of the thimble 39 bears against the arm 11 and holds the bolt perpendicularly to the

frame with the gear-wheel in the plane of its driving connections.

When the bolt is in the recess 36, the gear-wheel will be lowered out of mesh with the pinion and the carrier will be held in a stationary position by the eccentric 32 and arm 33; but when the bolt is adjusted in the slot 35 the gear-wheel will be in mesh with the pinion and the carrier and grinding-wheel will be oscillated, as above described. This will be true at any point of adjustment of the bolt in the slot, as all parts of the slot are at the same radial distance from the pinion-axis; but by adjusting the bolt to the front or rear in the slot the arc of grinding-wheel oscillation will be changed according as the gear-wheel 31 is moved to the front or rear. The bolt is adjusted toward the rear end of the slot for ordinary sickle-grinding and toward the front end thereof when it is desired to grind the draw-heads of the sickle-bars, a higher arc of oscillation being required in the latter case than in the former. When the bolt is adjusted in the recess 36, the carrier may be oscillated by hand, if desired, the operator grasping the disengaged gear-wheel 31 and moving the same backwardly and forwardly at will. This is done when a short oscillation is desired to grind a nicked or broken edge.

The use of a frame adapted to be straddled by the operator is of great importance in facilitating the adjustment of the oscillating mechanism, as above described, for the operator is thus left with both hands free and is supported in such a position that the wheel 31 and clamping bolt or nut can be grasped on opposite sides of the frame and moved to any desired position without loss of time, and when oscillating the carrier by hand, as above explained, the feet may be continuously applied to the pedals while using the hands to effect the adjustments.

We attach great importance to the peculiar construction of the frame whereby the operator is enabled to straddle it and is supported with great stability and in close proximity to the work, also to the means for adjusting the oscillating mechanism, as above described, whereby the machine is adapted to various uses.

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

1. The combination with a grinding-machine; of a supporting-frame formed of two bars diverging downwardly, one of said bars being provided with a cross-bar at its lower end, adapted to furnish lateral support to the frame; brace-bars connecting said diverging bars, and extended to form a seat-support; a seat slidably mounted on said brace-bars; and foot-power driving connections located on the diverging frame-bar, opposite the seat.

2. The combination with a set of divergent, supporting frame-bars; a grinding-wheel

mounted upon an oscillatory support moving substantially in the plane of said bars connected with the bars at or near their apex; foot-power driving mechanism on one of the bars, operatively connected with the grinding-wheel; and a seat connected with one of the bars at an intermediate point, the seat-supporting bar being adapted to be straddled by the operator when in position for actuating the driving connections.

3. The combination with a grinding-machine; of divergent supporting-bars; foot-power driving connections located on one of said divergent frame-bars; one or more brace-bars connecting said divergent frame-bars; a seat supported from said frame-bars, opposite said driving connections; and means for supporting said frame laterally, without interfering with the application of foot-power to said driving connections.

4. The combination of a frame formed of a pair of divergent supporting-bars; a grinding-wheel supported by said frame; foot-power driving connections mounted on one of the bars; a brace connecting said bars; a seat supported by the brace; and a transverse support extending laterally from the lower portion of one of the bars.

5. In a grinding-machine, the combination with a grinding-wheel; of an oscillatory carrier arranged to support said wheel; driving mechanism for rotating the wheel; mechanism for oscillating the carrier; a gear-wheel arranged to communicate motion from the driving connections to the oscillating mechanism; and means for adjusting the oscillating mechanism on different radial lines, but at the same distance from the center of the driving connection of said wheel, whereby the arc of oscillation may be altered.

6. In a grinding-machine, the combination with a grinding-wheel; of an oscillatory carrier arranged to support said wheel; driving mechanism for rotating the wheel; mechanism for oscillating the carrier; a gear-wheel or pinion arranged to communicate motion from the driving connections to the oscillating mechanism; and means for adjustably securing the oscillating mechanism on different radial lines, but at the same distance from the center of the driving connection of said wheel, and also at different distances from such center on a single radial line, whereby the wheel may be held with its teeth either in or out of mesh with those of the pinion.

7. In a grinding-machine, the combination with a grinding-wheel; of an oscillatory carrier therefor; driving mechanism for rotating said wheel; oscillating connections for the carrier; a pinion and gear-wheel arranged to communicate motion from the driving connections to the oscillating connections; a supporting-bearing for said gear-wheel; and means for clamping said bearing to the frame in various positions at different distances from the pinion-axis.

8. In a grinding-machine, the combination

of a supporting-frame; a grinding-wheel; an oscillatory carrier therefor; driving mechanism for rotating said wheel; eccentric mechanism for oscillating the carrier; a gear-wheel
5 arranged to communicate motion from the driving connections to the eccentric mechanism; and a bearing-thimble for said gear-wheel, secured to the frame by a bolt and nut passing through the thimble, and serving
10 also to hold the gear-wheel thereon.

9. In a grinding-machine, the combination of a supporting-frame; a grinding-wheel; an oscillatory carrier therefor; driving mechanism for rotating said wheel; eccentric mechanism for oscillating the carrier; a gear-wheel
15 arranged to communicate motion from the

driving connections to the eccentric mechanism; and a bearing-thimble for said gear-wheel, secured to the frame by a bolt and nut passing through the thimble, said bearing-thimble being provided with a laterally-projecting flange adapted to bear against the frame and hold the gear-wheel in the plane of its driving connections. 20

In testimony whereof we affix our signatures in the presence of two witnesses. 25

GEORGE M. LUTHER.
CLARENCE J. LUTHER.

Witnesses:

LEVERETT C. WHEELER,
C. L. ROESCH.