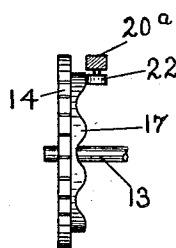
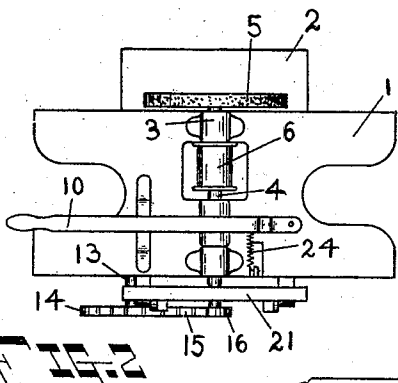
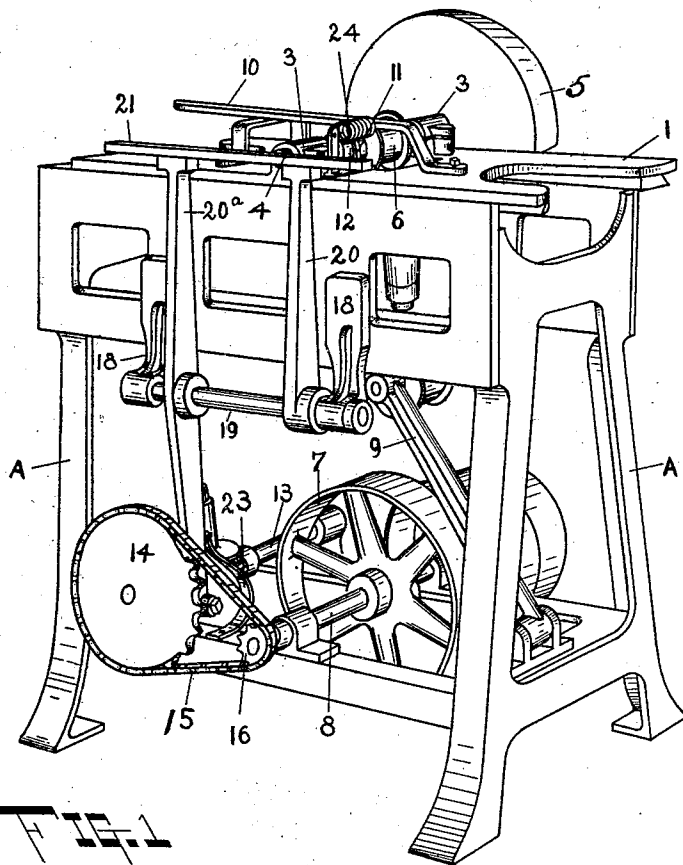


J. P. HEDSTROM.
OSCILLATING MECHANISM FOR LAP GRINDING MACHINES.
APPLICATION FILED FEB. 29, 1908.

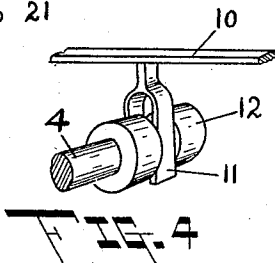
908,462.

Patented Jan. 5, 1909.



WITNESSES:

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OSCILLATING MECHANISM FOR LAP-GRINDING MACHINES.

No. 908,462.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed February 29, 1908. Serial No. 418,606.

To all whom it may concern:

Be it known that I, JOHN P. HEDSTROM, a citizen of the United States, residing at Big Rapids, in the county of Mecosta and State of Michigan, have invented certain new and useful Improvements in Oscillating Mechanism for Lap-Grinding Machines: 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.

My invention relates to lap grinders, and more particularly to the mechanism for causing the grinding wheel to travel automatically along the lap across the saw.

In machines of this class, it is usual to provide a frame having a bracket on which the saw is clamped, and a table automatically traveling on ways on the frame, the table having a shaft journaled therein, on which shaft is mounted a grinding wheel which is moved back and forth lengthwise of the lap being ground by the table. It is, however, necessary to provide means for moving the grinding wheel across the lap laterally of the saw as well as lengthwise, such lateral movement taking place simultaneously with the lengthwise movement.

It is one object of my invention to provide means for automatically actuating the shaft longitudinally without increasing the expenditure of power, and in such a manner as to eliminate all noise hitherto attendant upon such operation.

Another object of my invention is to provide a simple but strong mechanism capable of application to the styles of lap grinders now on the market, which mechanism is inexpensive, compact, and yet highly efficient in operation.

To these and other ends, my invention consists in certain novel features and combinations, such as will be more fully described hereinafter and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a lap grinder equipped with one form of my invention; Fig. 2 is a top plan view thereof, parts being omitted to better disclose the construction; Fig. 3 is a detail view of the annular cam and its connected parts; and Fig. 4 is a detail view of the connection between the lever and the shaft.

(A) indicates any suitable frame on which is slidably mounted the reciprocating table (1) and the saw-supporting shelf (2). The table is provided with the boxes (3) (3), in which is slidably received the driven shaft (4) extending across the machine, a grinding wheel (5) being secured at or near one end of the shaft above the supporting shelf (2). On the shaft is a driven pulley (6) and a belt passes around such pulley and the drive pulley (7) on a countershaft (8) journaled in the bottom of the frame, a belt-tightener (9) serving to maintain the proper tension on the belt. A hand-lever (10) is pivotally secured at one end to the reciprocating table, the lever passing above the driven shaft and provided intermediate its ends with a fork (11) depending therefrom and embracing a hub (12) secured to the driven shaft, whereby the shaft and grinding wheel carried thereby may be reciprocated longitudinally by hand in a direction transverse to the travel of the table or carriage (1). This mechanism is well-known in the art and needs no further description.

My invention is applied as follows: Journaled on the frame is a drive shaft (13) to which is secured a sprocket (14) carrying a chain (15) which passes over a second sprocket (16) on the countershaft to impart motion thereto. To the inner face of the sprocket (14) is secured an annular oscillating cam (17) rotating with the sprocket. Above the countershaft and to the frame are fastened a pair of brackets (18) (18) adapted to pivotally support a shaft (19) to which a pair of upwardly projecting parallel arms (20) (20^a) are secured, the upper ends of the arms carrying a bar (21) which lies exactly opposite the driven shaft (4) and extends transversely relative thereto. One of the arms (20^a) is longer than the other, the lower end of such arm depending to a point in proximity to the annular cam (17), the end of the arm having a laterally projecting roll (22) loosely mounted thereon, which roll is adapted to engage the cam, a suitable spring which, in the present instance, is shown as a leaf-spring (23) engaging the arm (20^a) to retain the roll (22) constantly in engagement with the cam.

From the foregoing it will be seen that as the cam rotates an oscillatory motion will be imparted to the arm (20^a), which motion will be transmitted to the bar (21).

It will be remembered that the shaft (4) carrying the grinding wheel is longitudinally slidable in its bearings, that end of the shaft opposite the grinding wheel projecting beyond its box (3) and adjacent the oscillating bar (21). In order to cause the end of the shaft to constantly abut the oscillating bar (21), I provide a retractile spring (24), one end of which is secured to the table, the opposite end being connected to the shifting lever (10), the tension of the spring being exerted to constantly maintain the end of the shaft in contact with the oscillating bar. Thus it is obvious that as the roll (22) rides over a high spot of the annular cam (17), the oscillating bar (21) will move outward away from the frame, the spring (24) through the lever and its fork operating to cause the end of the shaft (4) to follow the bar, then as the bar is moved inward as when the roll (22) is received in a low spot of the cam, the oscillating bar is moved inward forcing the shaft longitudinally toward the opposite side of the machine and against the tension of the spring (24).

It is evident that changes might be made in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth.

Having thus fully disclosed my invention, what I claim as new is—

1. A grinding machine comprising a longitudinally slidable grinding wheel shaft, means for rotating the shaft, a pivotally supported bar, means for imparting a vibratory movement to the bar in line with the longitudinal axis of the shaft, a tension means for maintaining one end of the shaft yieldingly in constant sliding contact with the bar, and means for moving the shaft laterally relative to the bar.

2. A lap grinder comprising a traveling carriage, a shaft mounted on the carriage, and capable of longitudinal movement transverse to the direction of travel of the carriage, a pivotally supported member extending transversely to the shaft, means for constantly maintaining contact between the shaft and member, an annular rotatable cam, and means engaging the cam and connected with the member for imparting an oscillatory movement thereto.

3. A grinding machine comprising a longitudinally slidable shaft, means for rotating the shaft, a vibratory bar extending transversely relative to the shaft, and independent thereof, means for actuating the bar and a

manually controllable tension means for yieldingly retaining the shaft in sliding contact with the bar.

4. A grinding machine comprising a longitudinally slidable shaft, means for rotating the shaft, a vibratory bar extending transversely relative to the shaft, and independent thereof, means for actuating the bar, and a tension means for yieldingly retaining the shaft in sliding contact with the bar.

5. A grinding machine comprising a longitudinally slidable shaft, means for rotating the shaft, a vibratory bar extending transversely relative to the shaft, and independent thereof, means for actuating the bar, and means for actuating the shaft longitudinally independently of the vibratory bar.

6. A grinding machine comprising a longitudinally slidable shaft, means for rotating the shaft, a vibratory bar extending transversely relative to the shaft, and independent thereof, means for actuating the bar, and means for actuating the bar longitudinally independently of the vibratory bar, and a spring for maintaining the end of the shaft in yielding contact against the bar.

7. In a lap grinder, the combination with a longitudinally-movable shaft, of a pivotally-supported member, means for constantly maintaining the shaft in engagement with the member, an arm depending from the member, an annular rotatable cam, the free end of the arm adapted to engage the cam to impart an oscillatory movement to the member.

8. In a lap grinder, the combination with a longitudinally-movable shaft, of a pivotally-supported shaft, arms fast on the shaft, a bar carried by the arms and located adjacent the longitudinally-movable shaft, a lever engaging the longitudinally-movable shaft, a spring, one end of which is connected to the lever to hold the longitudinally-movable shaft against the bar, and means for imparting an oscillatory movement to the bar.

9. In a lap grinder, a longitudinally-movable shaft, a member lying adjacent the shaft, means for maintaining a constant contact of the shaft with the member, an annular rotatable cam, a pivotally-supported arm connected with the member, and extending to a point adjacent the cam, and means engaging the arm for yieldingly retaining its free end in engagement with the cam.

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

JOHN P. HEDSTROM.

Witnesses:

RAY L. SWIFT,

LOUIS B. HANCHETT.