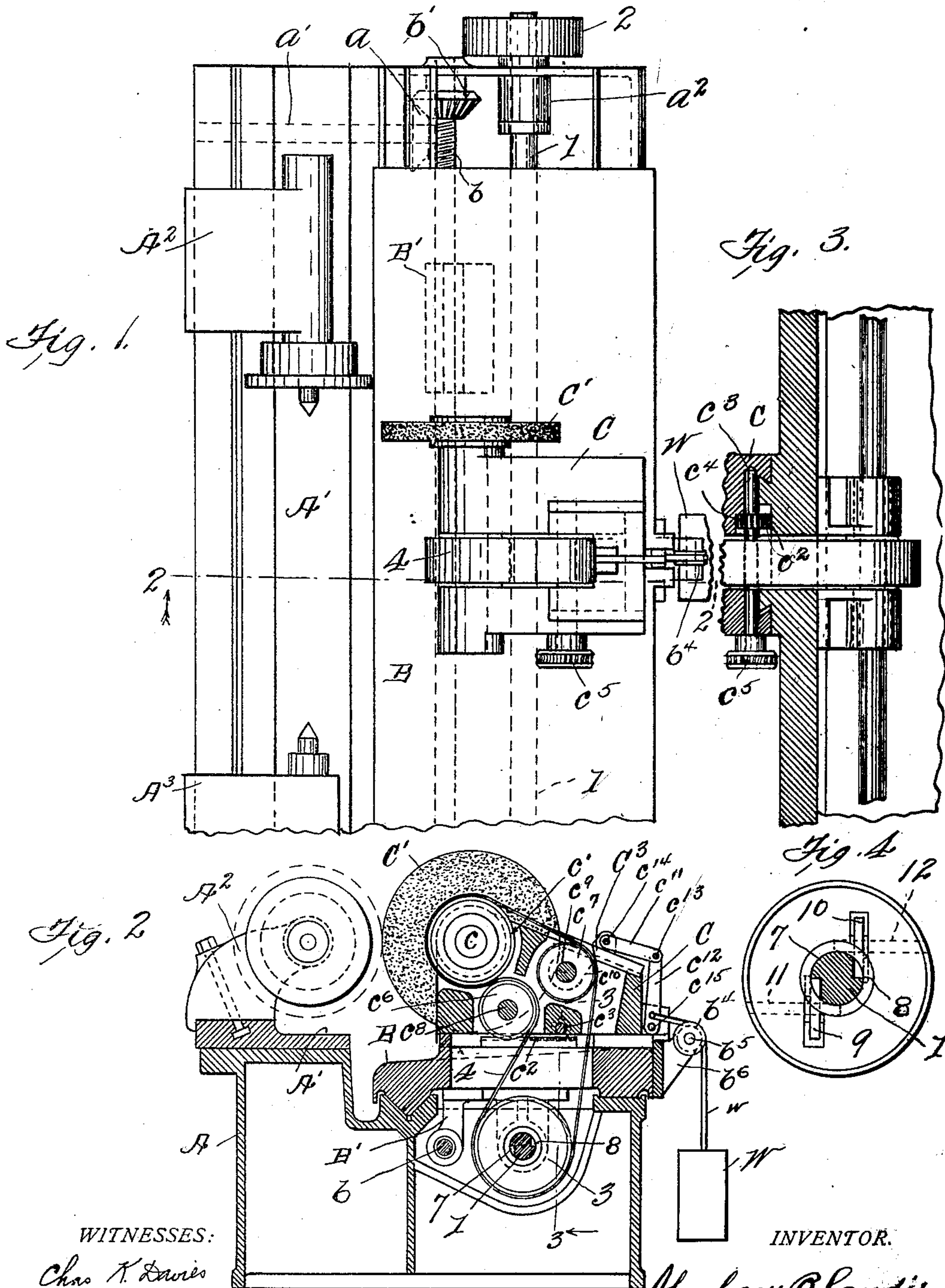


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GRINDING MACHINE.
APPLICATION FILED APR. 18, 1907.

945,465.

Patented Jan. 4, 1910.



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ABRAHAM B. LANDIS, OF WAYNESBORO, PENNSYLVANIA, ASSIGNOR TO LANDIS TOOL COMPANY, A CORPORATION OF PENNSYLVANIA.

GRINDING-MACHINE.

945,465.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed April 18, 1907. Serial No. 368,957.

To all whom it may concern:

Be it known that I, ABRAHAM B. LANDIS, a citizen of the United States, residing at Waynesboro, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Grinding-Machines, of which the following is a specification.

My said invention consists in certain improvements in the details of construction and arrangement of parts of grinding machines, whereby the driving mechanism thereof is, or may be, entirely contained within the machine itself and the use of overhead or line shafting is, or may be, entirely dispensed with.

This invention relates especially to an improvement on that particular machine shown in my Patent No. 724,891 of April 7, 1903, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings which are made a part hereof and on which similar reference characters indicate similar parts; Figure 1 is a top or plan view of a portion of a grinding machine embodying my said invention, Fig. 2 a transverse sectional view through the same on the dotted line 2—2 in Fig. 1, Fig. 3 a detail section on the dotted line 3—3 in Fig. 2, and Fig. 4 a detail view similar to a portion of Fig. 3 but on a larger scale.

In said drawings the portions marked A represent the bed of the machine, B the grinding wheel carriage, and C the grinding wheel base.

The bed A is or may be of any improved form or construction adapted to support the other parts of the machine. It is provided with a work-supporting table A' on which is mounted the head-stock A² and the foot-stock A³ for holding the work, as is usual.

The grinding wheel carriage B is mounted on suitable ways on said bed A opposite to the work-holding table A' and is operated to traverse back and forth on said ways by means of a longitudinally extending screw b which engages with a screw-threaded perforation in the lower end of the bracket B', which depends from the under side of said carriage. Said screw b is supported at its outer ends in suitable bearings in the ends

of the bed A and is provided at one end with a gear wheel b' with which a gear wheel a on a transverse shaft a' (indicated by dotted lines) journaled in bearings on the bed A is adapted to engage. Said shaft a' is driven from the driving mechanism by any suitable connection (not shown), as will be readily understood.

The wheel base C is mounted to slide transversely on the top of said carriage B and carries the grinding wheel C' which is mounted on a suitable shaft c journaled in suitable bearings in said base. A pulley c' is mounted on said shaft c by which power may be applied for driving it, as will be presently described. A rack-bar c² is mounted on the carriage B alongside the ways on which said wheel base is adapted to slide and a shaft c³ journaled in suitable bearings in said wheel base has a pinion c⁴ which engages with said rack-bar. A gear wheel c⁵ on the outer end of said shaft may be connected with any suitable driving mechanism, or operated by hand, to feed the wheel base with the grinding wheel toward the work. Said wheel base C is formed hollow and the carriage B is formed with an opening immediately beneath said wheel base which leads to the inside of the bed A. The main driving shaft 1 is journaled in suitable bearings a² in said bed being provided with a pulley 2 on its outer end by which it may be geared to the driving power. A pulley 3 is mounted on said shaft beneath the wheel base C and is belted to the driving pulley c' on the grinding wheel shaft c by a belt 4. Said belt 4 passes over an idler pulley c⁸ mounted on a shaft c⁸ in the wheel base then over pulley c' and then down over another idler pulley c⁷ on a shaft c⁹, which is mounted in bearings on the brackets c¹⁰, which depend from the under side of a plate C³ which is mounted on the top of said wheel base C. A lever formed in two parts c¹¹ and c¹² connected by a pivot c¹³ is pivoted at its upper end to ears on the top of said plate C' by means of the pivot c¹⁴ and at its lower end is connected to the lower rear side of the wheel base by the pivot c¹⁵. A weight W is connected by a cord w to the part c¹² of said lever at a point a short distance above the pivot c¹⁵. The cord w passes over an

idler pulley b^4 on a short shaft b^5 mounted in brackets b^6 on the rear edge of the carriage B. The weight W by reason of this connection serves not only to keep the belt 4 taut by reason of the strain through the lever upon the pivot c^{14} which tends to draw the pulley c^7 against the rear side of the belt but it also serves to take up any back-lash or vibration of the wheel base C in operation and prevent the grinding wheel from being jarred or vibrated against the work.

The pulley 3 is mounted on the shaft 1 in the same manner as illustrated in my former patent above referred to, said shaft 1 being formed with longitudinal grooves 7 and 8 at diagonally opposite sides with which small anti-friction wheels 9 and 10 mounted on shafts 11 and 12 on the face of the pulley 3 are adapted to engage, thus securing said pulley to revolve said shaft but permitting its free movement longitudinally of the machine upon said shaft as the carriage B traverses back and forth. By this arrangement the entire driving mechanism may be concealed within the bed of the machine except the end of shaft 1 with pulley 2 thereon, which is geared to any suitable driving power. Said driving power may be a motor mounted upon the bed of the machine itself, if preferred, and a machine thus provided is entirely contained within itself and may be set up and operated without reference to line shafting such as is usually required to be in shops to furnish power to such machinery.

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

1. In a grinding machine, the combination, of the bed, the grinding wheel carriage mounted to traverse back and forth on said bed, means for traversing said carriage, the grinding wheel base mounted to slide transversely on the top of said carriage, said base being formed hollow and an opening being formed through the carriage beneath said base to within the grinding machine bed, a driving shaft journaled in bearings within said bed, a pulley mounted on said shaft to turn therewith and slide thereon, a belt connecting said pulley with a pulley on the grinding wheel spindle said belt passing through said opening in the carriage and the grinding wheel base and over suitable idler pulleys, substantially as set forth.

2. In a grinding machine, the combination, of the bed, the grinding wheel carriage mounted to traverse longitudinally on said bed, the grinding wheel base mounted to slide transversely on said carriage, the grinding wheel mounted on a spindle journaled in bearings on said base, a pulley on said spindle, a driving shaft mounted within said bed, a pulley mounted on said shaft to rotate therewith and slide thereon, a belt

running from said pulley to the pulley on the grinding wheel spindle through openings formed in the carriage and the grinding wheel base, and idler pulleys mounted adjacent to said grinding wheel pulley for supporting said belt, substantially as set forth.

3. A grinding machine comprising a traversing carriage having a wheel base mounted thereon adapted to slide transversely thereof, a driving shaft mounted within the bed of the machine, said wheel base and said carriage being formed with openings and the driving shaft and grinding wheel spindle being connected by gearing passing through said openings, substantially as set forth.

4. A grinding machine comprising a traversing carriage, the wheel base mounted thereon, the grinding wheel journaled on said wheel base, said wheel base and carriage being formed with openings leading to the interior of the bed of the machine, the driving shaft journaled within said bed, a sliding pulley on said driving shaft, and a belt extending from said pulley through the openings in said carriage and said wheel base over supporting idler pulleys to the pulley on the grinding wheel spindle, substantially as set forth.

5. A grinding machine comprising a traversing carriage, the wheel base mounted to slide transversely on said carriage, said wheel base and carriage being formed with openings leading to within the grinding machine bed, the driving shaft within said bed, a belt leading from a pulley on said driving shaft through said openings to a pulley on the grinding wheel spindle, idler pulleys mounted to support said belt one of said pulleys being mounted on a moving part, and a weight connected with said moving part for holding it against said belt, whereby said belt is held under tension, substantially as set forth.

6. A grinding machine comprising a traversing sliding wheel base, a belt connecting the grinding wheel on said base with the driving shaft, an idler pulley mounted beneath said belt on the wheel base, and a weight connected to the supports of said pulley and adapted to draw it against said belt for tightening the same, substantially as set forth.

7. In a grinding machine, the combination, of the bed, the traversing carriage, the wheel base mounted to slide transversely on said carriage, the grinding wheel mounted on a spindle journaled in bearings on said wheel base, the driving shaft mounted within said bed, the belt extending through openings in said carriage and base connecting said shaft and the grinding wheel spindle, an idler pulley mounted on a moving part on said wheel base under said belt, and a weight connected to the rear end of said

wheel base and to the support of said idler pulley, whereby it is adapted to operate both to tighten said belt and to take up the backlash of said wheel base, substantially as set
5 forth.

In witness whereof, I have hereunto set my hand and seal at Waynesboro, Pa., this

13th day of April, A. D. nineteen hundred and seven.

ABRAHAM B. LANDIS. [L. s.]

Witnesses:

SHERMAN A. MILLER,
GEORGE H. DICKEL.