T. C. OLSON.

CYLINDER GRINDING MACHINE.

APPLICATION FILED DEC. 1, 1916.

1,217,339. Patented Feb. 27, 1917.

Fig. 1.

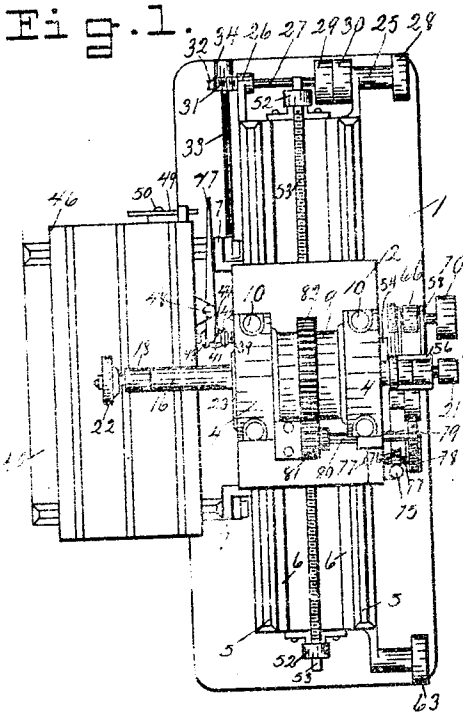


Fig. 2.

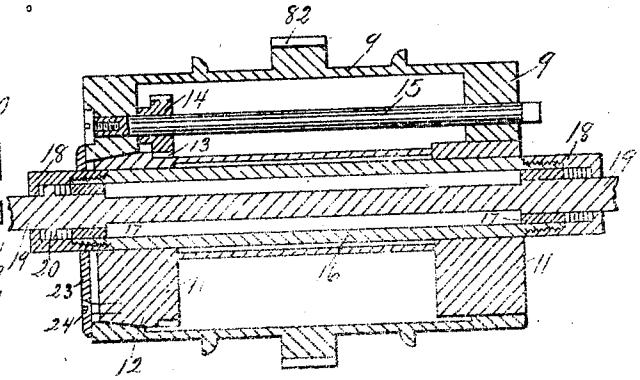


Fig. 3.

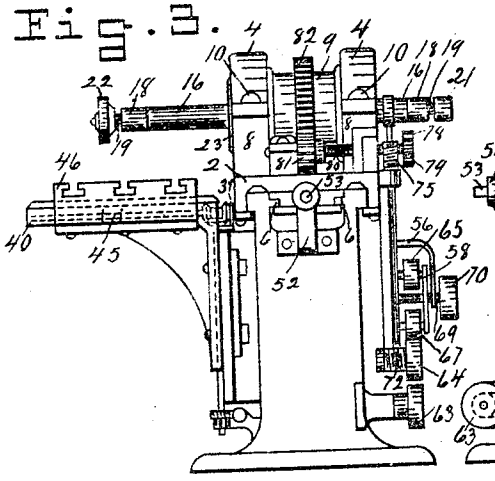
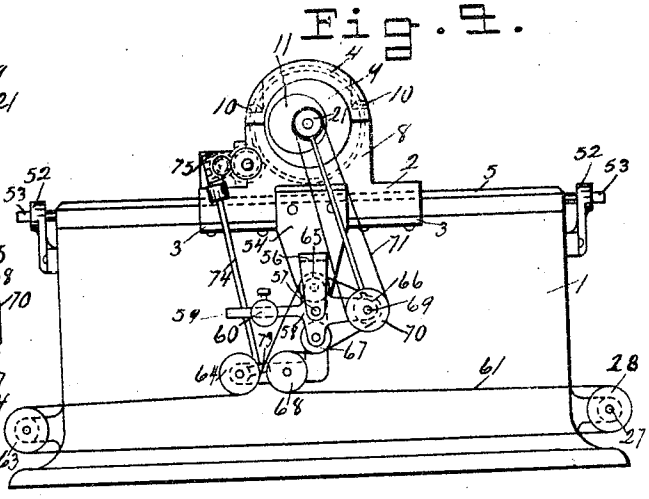


Fig. 4.



WITNESSES.

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THOMAS C. OLSON, OF MADISON, WISCONSIN, ASSIGNOR TO THE THOMAS C. OLSON MACHINE COMPANY, OF MADISON, WISCONSIN, A COPARTNERSHIP COMPOSED OF THOS. C. OLSON AND E. J. McEACHRON.

CYLINDER-GRINDING MACHINE.

1,217,339. Specification of Letters Patent. **Patented Feb. 27, 1917.**

Application filed December 1, 1916. Serial No. 134,492.

To all whom it may concern:

Be it known that I, THOMAS C. OLSON, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Cylinder-Grinding Machines, of which the following is a specification.

My invention relates to adjustable devices for grinding the inside or bore of engine cylinders; and the objects of my invention are, first, to have a grinding or abrasive wheel so mounted that it can be quickly and accurately adjusted from a central position to describing a circle of the desired diameter; second, to provide a rigid protruding support for the spindle upon which the grinding wheel is disposed; third, to mount the support centrally in a frame having two concentric heads adapted to bearings in a revoluble cylindrical casing, said bearings disposed eccentrically of the said casing; fourth, by means of a gear on one of the heads of the frame and a pinion meshing therewith to revolve the frame in the casing causing the spindle support to move from the center of the said casing to any point within the eccentric movement of the frame; and, fifth, by contributory mechanical means to produce a machine adapted to hold and automatically bring an engine cylinder into the desired relation with the grinding wheel to perform the work required.

I attain the above and other objects which will be apparent upon perusal of the specification by the mechanism shown in the accompanying drawings in which—

Figure 1 is a plan of my device, Fig. 2, a horizontal section through the revoluble casing and internally disposed members and Fig. 3, is a right hand elevation. Fig. 4, is a rear elevation.

Similar numerals refer to corresponding parts throughout the several views.

The frame 1, is preferably constructed of cast iron and of box type. Extending the entire length of the top are two parallel V-shaped ways. On the inside of the said V-shaped ways 5 are parallel wedges 6. Vertical right angle brackets 7, integral with the frame are located on the front side thereof.

A carriage 2 is provided and adapted to travel the length of the ways 5 and is held in working relation thereto by the gibs 3. Upwardly extending members 8, on top of the carriage form half bearings for the revoluble casing 9 and caps 4, secured to the said half bearings by the screws 10 complete the journal boxes for the said casing. Round holes are located in the heads of the casing, the one in the rear head being bored straight and the one in the front head being tapered toward the front, see Fig. 2. Into said holes is fitted the frame 11 which includes a cylindrical sleeve with an eccentric head at both ends thereof adapted to loosely fit the holes in the casing 9, aforesaid. The front or tapered head 12, has a gear 13, disposed on the rear edge which is in mesh with the pinion 14, mounted on shaft 15. Journaled in the heads of casing 9, and passing through the rear head to be convenient for attaching an operating handle, within the cylindrical sleeve in frame 11, is disposed a spindle support 16, which is a tube with bronze bushings 17, inserted in each end and caps 18, disposed on both ends and threaded thereto. Within the bronze bushings 17, is revolubly journaled a spindle 19 with a collar 20, thereon. Between the collar 20 and the adjacent bushing 17, are alternate felt and metal washers to prevent leakage of oil from the support 16. The rear end of the spindle is provided with similar means for retaining the oil. Said spindle 19, passes through the caps 18, and a pulley 21, is mounted on the rear end and an abrasive wheel 22, is secured to the front end. Covering the front end of tapering head 12, is a clamping plate 23 which abuts the casing 9. A plurality of screws 24 pass through the said plate 23 and are threaded into the head 12, for the purpose of locking the said head in the taper bearing when in the desired position for work. Adjacent the bottom on the right end looking from the back of the frame are located the brackets 25 and 26 in which drive shaft 27 is journaled. Upon one end of said shaft pulley 28 is disposed. Next along the shaft inside the bracket 25, are located the tight and loose pulleys 29 and 30 and upon the opposite end of the shaft is secured a worm 31 which meshes with worm gear 32 mounted on horizontal shaft 33. Said shaft 33 passes forward from bearing 34 through bearing 35, carrying worm 36 on the extreme end thereof. The worm 36, meshes with worm gear 37, mounted on ver-

tical shaft 38 and connected in working relation thereto by a key-way and spline allowing the shaft to be raised or lowered, through the said gear 37. The upper end of the shaft 38 is journaled in a bracket 39 integral with the table 40 and carries a bevel gear 41, mounted on rod 51 which is journaled in the aforementioned bracket 39. At one end are bevel gears 42 and 43 which have clutch notches on the inner surfaces registering with the teeth in the double faced clutch sleeve 44, slidably disposed between the gears 42 and 43 on the rod 51. Said rod a distance from the gears is threaded to fit a nut 45 integral with the platen 46. To said sleeve 44 is pivotally attached the inner end of lever 47. Said lever is fulcrumed at 48 to the table 40. To one end of platen 46 is adjustably secured a rod 49 by the screw 50 for the purpose of engaging the end of lever 47 at the desired point and throwing out or reversing the platen feed screw 51. To both ends of the frame 1 near the top are attached the brackets 52 and revolubly disposed in said brackets is a lead screw 53 which engages a nut integral with the bottom of the carriage 2. Crank handles can be applied to either end of the said lead screw for moving the carriage to the desired position. To the rear side of the carriage 2, see Fig. 4, is secured a depending apron 54 which extends downward a distance thence turning to the left horizontally and terminating in boss 55 a distance from the top of the apron. On the top of the apron on the outside the integral bracket 56 is located which extends outward and downward forming the outer support for pin 57. The inner end of said pin is secured in the apron 54. Upon the said pin 57 is loosely hung a three armed bracket or yoke 58, which has a backward extending arm 59 adapted to carry a weight 60. The belting arrangement of my device is as follows. The belt 61 starting at pulley 28 on the outer end of drive shaft 27 thence under idler 63 and around to the under side of pulley 64, thence over idler pulley 65 and around pulley 66 thence under idler 67 over and under idler 68, back to place of beginning, thereby driving shaft 69, journaled in the outer end of yoke 58. Said shaft 69, carrying at its outer end pulley 70, which is connected by belt 71 to the grinder spindle pulley thereby transmitting power from drive pulley 29 to the grinding wheel 22. Upon the hub of pulley 64 a worm 72 is formed which meshes with worm gear 73. Said gear 73 is disposed at the lower end of shaft 74 and a worm 75 is located at the top of said shaft which meshes with worm gear 76 which is mounted on short shaft 77. On the outer end of shaft 77 is disposed spur pinion 78 which meshes with spur gear 79, on the outer end of shaft 80. Disposed on shaft 80 is a second spur pinion 81 in mesh with a ring gear 82, surrounding and attached to the central portion of the casing 9, thereby transmitting power from pulley 64 to the revoluble casing 9. A stub shaft 83 is connected by gears in the usual way to a screw not shown for raising and lowering the table 40. Said table has transverse V-ways on the top at the ends thereof which support and guide the platen 46 to which the work is to be secured.

I claim—

1. In a device of the described class, a revoluble casing, a carriage supporting the same, a spindle disposed eccentric of said frame, a spindle supporting member eccentric with said frame and through which said spindle is disposed, abrasive means mounted on said spindle, a collar disposed near one end of said spindle, alternate absorbent and metallic rings adjacent said collar, caps on said supporting member adapted to hold said rings and collar in contact with bearings disposed in said supporting bracket.

2. In a device of the described class, a revoluble casing, a carriage supporting the same, said carriage mounted on V-ways on a bed plate or frame, an apron secured to the back of the carriage, said apron adapted to carry a plurality of suitably mounted pulleys, a yoke pivotally disposed on said carriage carrying driving pulleys and idlers, a link connecting said yoke and spindle supporting member, a counter weight disposed on said yoke counterbalancing said link.

3. In a device of the described class, a revoluble casing, a carriage supporting the same, a spindle disposed eccentric of said frame, a yoke pivotally disposed on said carriage carrying driving pulleys and idlers, a pulley disposed on a spindle disposed eccentric of the frame, a means connecting said pulley with the driving pulley on said yoke, a means connecting said driving pulley with pulleys on a drive shaft mounted on said bed plate by means of idlers in a manner that retains the same tension on the driving means regardless of the position of the carriage.

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

THOS. C. OLSON.

Witnesses:

ANDREW JOHNSON,

MARTIN J. OLSON.