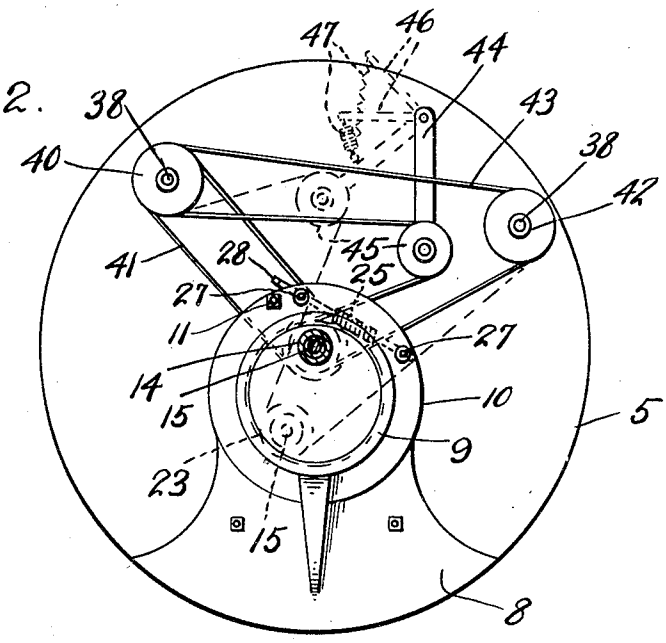
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CYLINDER GRINDING ATTACHMENT FOR LATHES

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Fig. 2.



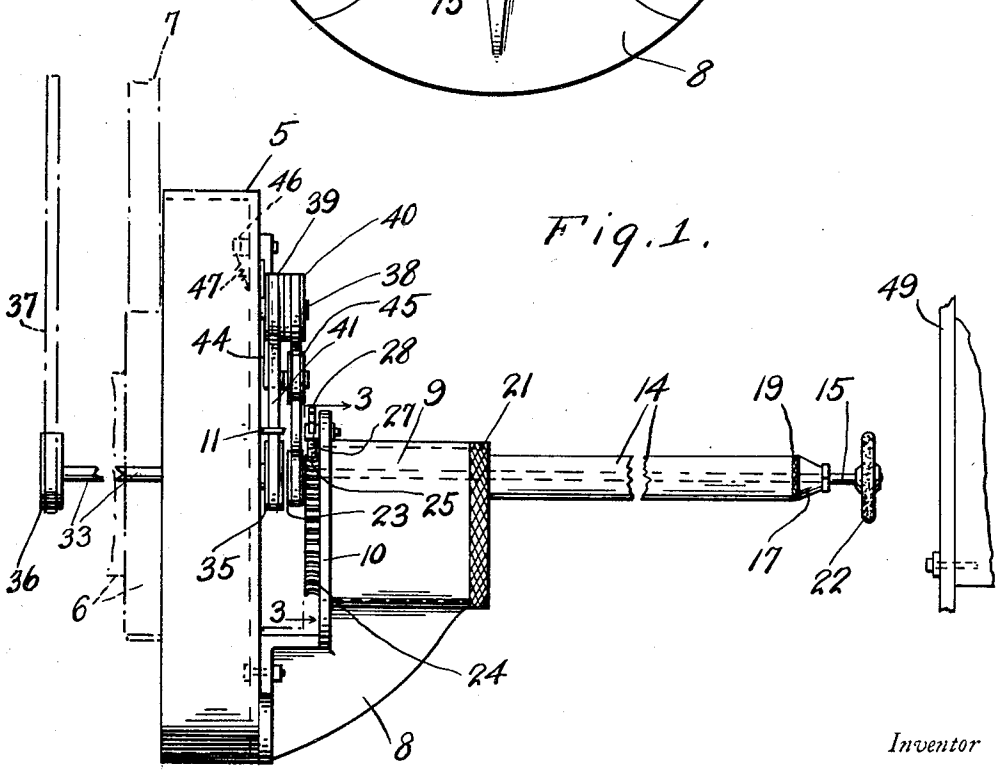


Fig. 1.

Inventor

F. H. Gjesdahl

By Clarence A. O'Brien

Attorney

June 10, 1930. F. H. GJESDAHL 1,762,658

CYLINDER GRINDING ATTACHMENT FOR LATHES

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Fig. 3.

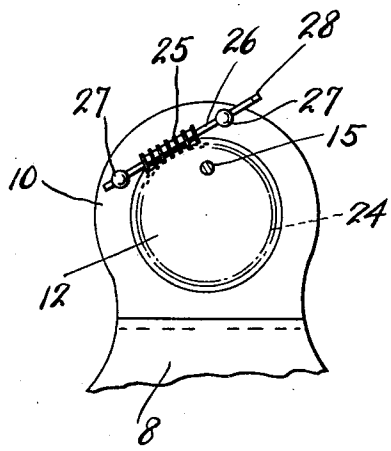


Fig. 4.

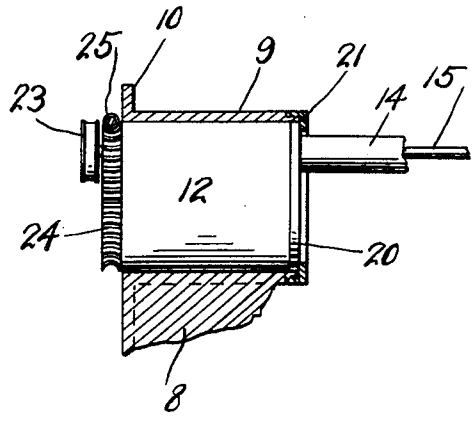
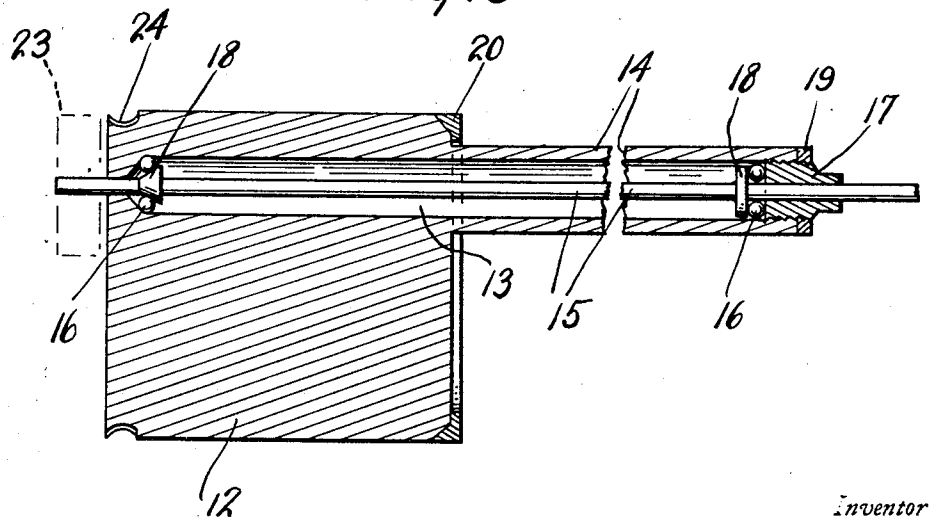


Fig. 5.



Inventor

F. H. Gjesdahl

By Clarence O'Brien

Attorney

June 10, 1930. F. H. GJESDAHL 1,762,658

CYLINDER GRINDING ATTACHMENT FOR LATHES

Filed May 28, 1928 3 Sheets-Sheet 3

Fig. 7.

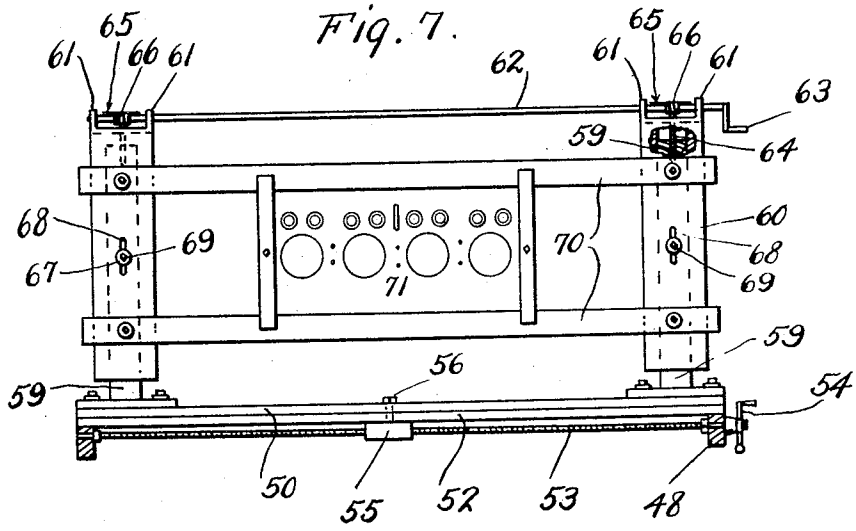


Fig. 8.

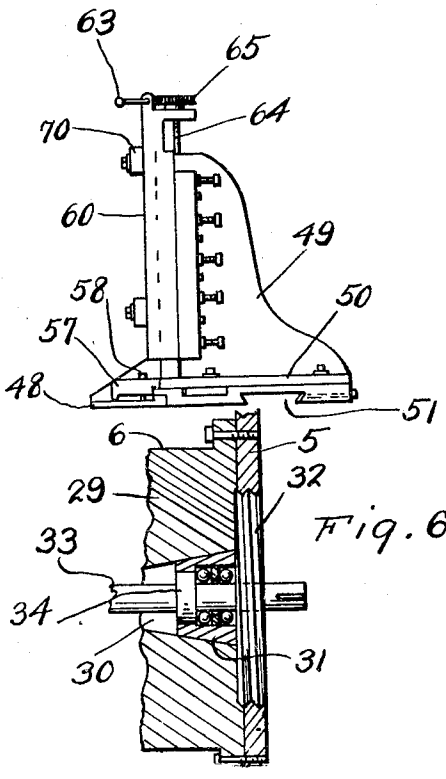
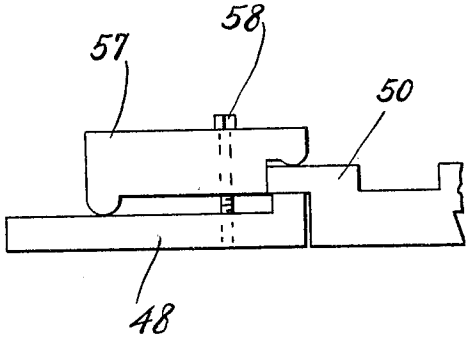


Fig. 6.

Fig. 9.



Inventor

F. H. Gjesdahl

By Clarence A. O'Brien

Attorney

Patented June 10, 1930

1,762,658

UNITED STATES PATENT OFFICE

FREDERICK H. GJESDAHL, OF CROOKSTON, MINNESOTA

CYLINDER-GRINDING ATTACHMENT FOR LATHES

Application filed May 28, 1928. Serial No. 281,118.

The present invention relates to a cylinder grinding apparatus and has for its principal object to provide means for operatively attaching the same upon a lathe table of conventional construction.

A further object of the invention is to provide a cylinder grinding attachment mounted upon the face plate of the lathe for rotation therewith and also providing a high speed drive means for the grinding member operable independent of the lathe operating means.

A still further object is to provide a supporting means for the grinding member adapted for eccentrically mounting the same upon the face plate and providing means for adjusting the grinding element eccentrically with respect to said face plate.

A still further object is to provide an automatic take up device for the drive means of the grinding element adapted to automatically compensate for the eccentric adjusting of the grinding element with respect to the face plate.

An additional object is to provide a supporting table for the cylinder block slidably mounted upon the lathe table and adapted for vertical and transverse adjustment with respect to the face plate of the lathe whereby to move the various cylinders of the block into grinding position with respect to the grinding element carried by the face plate.

A still further object is to provide an attachment of this character which may be easily and quickly mounted in operative position upon the lathe without making any material changes or alterations in the construction thereof, which is of a simple and practical construction, efficient and reliable in performance, and relatively inexpensive to manufacture and otherwise well adapted to the purpose for which the same is intended.

Other objects and advantages reside in the special construction, combination and arrangement of the various elements forming the invention as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the attachment shown in position upon the lathe,

Figure 2 is a front elevational view of the face plate of the lathe with the cylinder grinding attachment mounted in position thereon and with the grinder and housing of the grinding element shown in section,

Figure 3 is a fragmentary transverse sectional view taken along a line 3—3 of Figure 1 looking forwardly of the face plate and illustrating the eccentric adjustment for the shaft of the grinding element,

Figure 4 is a fragmentary longitudinal sectional view through the support for the eccentric hub and with the latter shown in assembled position with respect thereto,

Figure 5 is a longitudinal sectional view through the eccentric hub and drive shaft for the grinding element,

Figure 6 is a fragmentary longitudinal sectional view through the bearing support for the end of the drive shaft of the grinding element extending through the face plate,

Figure 7 is a front elevational view of the adjustable cylinder block supporting table,

Figure 8 is a side elevational view thereof, and

Figure 9 is a detail in elevation of one of the clamping members provided for securing the cylinder block supporting table upon the lathe table.

Referring now to the drawing in detail, wherein for the purpose of illustration I have disclosed a preferred embodiment of my invention, the numeral 5 designates the face plate of a lathe of conventional construction having the usual series of step wheels or drums 6 attached at the rear side thereof for rotating the face plate through a drive belt 7. To the opposite side of the face plate is suitably secured the supporting bracket 8 having a housing 9 formed thereon of an annular formation with its opposite end open and with one end of said housing disposed in spaced relation upon the adjacent side of the face plate 5.

The end of the housing 9 disposed adjacent the face plate is provided with a flange 10 forming an attaching means for a plurality of bolts 11 extending outwardly from

the face plate whereby to secure the housing in spaced relation with respect to said face plate.

A hub member 12 is supported for rotation in the housing 9, said hub having an eccentrically formed bore 13 extending longitudinally therethrough, one end of said bore being provided with a shaft housing 14 extending outwardly from one end of the hub and within which a shaft 15 is extended with its opposite end protruding outwardly from the end of the hub and the shaft housing respectively and journaled for rotation therein.

Ball bearings 16 are provided within the bore 13 for the shaft whereby to facilitate the rotation thereof, the outer end of the shaft housing 14 being internally threaded and adapted for threadedly receiving an adjusting nut 17 carried by the shaft for adjusting the bearing 16 with respect to the shaft and for operating with thrust collars 18 formed on the shaft adjacent the bearing 16 for preventing end play of said shaft. A locking nut 19 is threaded on the adjusting nut 17 in abutting relation with the end of the shaft housing 14 whereby to retain the adjusting nut in adjusted position.

At the end of the hub 12 remote from the face plate 5 is arranged a thrust ring 20 engaged by a retaining ring 21 threaded on the adjacent end of the housing 9. The thrust ring 20 and retaining ring 21 thus cooperate to secure the hub 12 against longitudinal movement outwardly of the housing. The binding action of the retaining ring 21 against the thrust ring 20 all cooperates to secure the hub 12 against idle rotary movement with respect to the housing 9 but will permit rotary adjustment of the hub in a manner more fully hereinafter described.

To the outer end of the shaft 15 is mounted a cylinder grinding wheel 22 and on the opposite end of the shaft, disposed adjacent the face plate 5 is mounted a drive pulley 23. The end of the hub 12 disposed adjacent the face plate 5 is formed into a worm wheel 24 operatively engaged by a worm gear 25 formed on a shaft 26, the opposite end of said shaft being supported for rotation by a pair of spaced apart lugs 27 formed on the flange 10 of the hub housing.

One end of the shaft 26 is squared as shown at 28 providing means for applying a wrench thereto whereby to operate the gear 25 and thereby adjust the hub 12 within the housing and thus eccentrically adjust the shaft 15 with respect to the axis of the face plate 5. The face plate 5 is provided with a threaded central opening about which on the side of the plate remote from the bracket 8 is a hub 29 having a tapering bore 30 inwardly of which is fitted a ball bearing assembly 31, the outer periphery of the assembly likewise being of a tapering formation in order to snugly fit within the bore of the hub.

A screw 32 is fitted in an opening in the face plate for retaining the ball bearing assembly in position within the hub 6 and through said hub and the screw 32 is extended a shaft 33 having a flange 34 arranged thereon for retaining the assembly in position.

One end of the shaft 33 protrudes outwardly from the face plate at the side thereof adjacent the bracket 8 and has a pulley wheel 35 keyed thereon. The opposite end of the shaft 33 extends longitudinally of the lathe toward the rear end thereof and also mounts a pulley wheel 36 arranged for operation through a belt 37.

A pair of stub shafts 38 is clamped outwardly from the side of the face plate adjacent the bracket 8 and disposed upon the side of the face plate in substantially triangular formation with respect to the end of the shaft 33. Upon one of the shafts 38 is arranged a pair of pulley wheels 39 and 40 respectively, the pulley wheels 39 being operated through a belt 41 from the pulley wheel 35 of the shaft 33.

The other of said shafts 38 also carries a pulley wheel 42, the pulley wheels 40 and 42 having a drive belt 43 extending thereabout, which belt also extends about the pulley wheel 23 of the shaft 15 whereby to provide for the operation thereof.

The pulley wheels 39 and 40 are keyed together for simultaneous rotation and it will therefore be apparent that upon the operation of the shaft 33 through the drive belt 37 that the driving shaft 15 will also be operated by reason of the drive connection therebetween provided by the various pulley wheels and the belts 41 and 43.

The belt tightener 44 is provided for the drive belt 43 comprising a pivotally mounted arm having a pulley wheel 45 rotatably mounted at the free end thereof and about which the belt 43 is extended, the pivoted end of the arm having a bell crank lever 46 attached thereto with its free end connected with a spring 47 whereby to normally urge the free end of the arm of the belt tightener in engagement with the belt 43.

The belt tightener 44 automatically maintains the belt 43 in a taut condition and takes up the slack in the belt created by the eccentric adjustment of the pulley wheel 23, which it will be understood is eccentrically mounted on the hub 12.

The relative positions of the belt tightener and independent high speed drive means provides for the rotation of the shaft either in the same or opposite direction from the rotation of the base plate, and in a desired eccentrically adjusted position, so that the grinding element 22 may be rapidly operated.

Also by providing for the eccentric adjustment of the shaft with respect to the face plate the grinding element may be

moved in a circle about the axis of the face plate upon the rotation of the latter and simultaneously with the rotation of the grinding element.

Upon the lathe table 48 is adjustably arranged a cylinder block support indicated generally at 49 and comprising a base 50 extending transversely of the lathe table with its under surface having a dovetailed groove 51 formed therein and within which is seated a guide 52 carried by the lathe table.

Extending transversely of the lathe table is a screw 53 having an operating crank 54 at one end thereof. A carrier 55 having a threaded bore formed therein is mounted for movement upon the screw, said carrier being provided with a bolt 56 extending laterally therefrom providing means for attaching the same to the base 50 of the cylinder block support.

Upon the operation of the screw 53 the carrier 55 will be moved transversely of the lathe table and through such movement will slidably operate the base 50 so as to adjust the support transversely of the table. The base 50 may be secured in transversely adjusted position by means of a clamping block 57 adapted to have its opposite end secured respectively to the base and to the lathe table by a clamping bolt 58.

At each end of the base 50 is an upright post 59 slidably arranged within a guide 60, said guide having its upper end provided with a pair of spaced ears 61 through which a shaft 62 is extended for rotation therein, said shaft communicating with the respective guides at the opposite sides of the support and having a crank handle 63 formed at one end thereof.

The upper end of each of the posts 59 is provided with a vertically extending threaded bore within which is threaded the lower end of a screw 64 and having a worm wheel 65 keyed to its upper end. The worm wheel or gear 65 is operatively engaged by a worm 66 carried by the shaft whereby upon the operation of the crank 63 to cause the rotation of the screw 64 and vertically adjust the guide 60 with respect to the post 59.

The guide 60 may be firmly secured in vertically adjusted position by means of bolts 67 extending laterally from the post and inserted through slotted openings 68 in the guides, the outer ends of the bolts being provided with nuts 69 for securing the parts in adjusted position with respect to each other.

Extending between the guides 60 is a pair of spaced apart horizontally disposed transversely extending cylinder block supporting bars 70 adapted to engage the opposite sides of the cylinder block 71 whereby to secure the same in position upon the cylinder block support.

It will be apparent from the foregoing that the cylinder block 71 may thus be adjusted transversely with respect to the lathe table or vertically so as to swing the respective cylinders of the block into grinding engagement with the grinding member 22.

It is obvious that my invention is susceptible to various changes and modifications in construction without departing from the spirit of the invention or the scope of the appended claims, and I accordingly claim all such forms of the device to which I am entitled.

Having thus described my invention, what I claim as new is:

1. In combination, a rotatably mounted lathe face plate, shaft supporting means secured at one side thereof, a shaft rotatably mounted in said supporting means, means for eccentrically adjusting said shaft with respect to the face plate, a shaft extending outwardly from the opposite side of the face plate operable independent of the operating means for the face plate, and means operatively connecting said shafts comprising a plurality of pulleys arranged in triangular formation on one face of said face plate, one of said pulleys being mounted on said last named shaft, a pulley mounted on the inner end of said first named shaft, and belt drive means trained over said pulleys for operatively connecting said shafts, and automatic belt tightening means carried by the face plate operable to maintain the belt under operative tension in accordance with the adjustment of said first named shaft.

2. In combination, a lathe face plate, a shaft supporting bracket spaced from the face plate and having one edge extended inwardly for attaching to one side of the face plate, a hub rotatably carried by said bracket, a shaft eccentrically mounted in the hub and extending outwardly from the opposite end thereof, means engageable with the hub for moving the shaft into and out of concentric position with respect to the axis of the face plate, means carried by the brackets engaging the hub for frictionally securing the hub against idle rotation, a shaft extending through the center of the face plate with the ends disposed outwardly at the opposite sides thereof, and a belt drive connection for said shafts comprising a plurality of pulleys arranged in triangular formation on one face of said face plate, one of said pulleys being mounted on said last named shaft, a pulley mounted on the inner end of said eccentric shaft, and belt drive means trained over said pulleys for operatively connecting said shaft, and an automatic belt tightener for said belt drive means operable to constantly maintain a driving connection with said shaft whereby to compensate for the eccentric adjustment of said first named shaft.

3. In combination, a lathe face plate, a shaft supporting bracket carried at one side

thereof in spaced relation thereto, a housing formed on said bracket, a hub rotatably mounted in said housing, a driven shaft disposed eccentrically with respect to said hub and rotatably carried thereby with its end extending outwardly from the end of the hub, a grinding element mounted on the outer end of said shaft, means for adjustably securing said hub against rotation in said housing whereby to selectively arrange said shaft either concentrically or eccentrically with respect to said face plate, a drive shaft journaled for rotation at the center of said face plate and operable independently thereof, a belt drive connection supported by the face plate for said drive and driven shaft and a belt tightener for said belt drive connection operable for maintaining the same in driving relation with respect to said shaft with the driven shaft disposed either concentrically or eccentrically with respect to said face plate.

In testimony whereof I affix my signature.

FREDERICK H. GJESDAHL.