April 5, 1949. J. A. RILEY 2,466,478

GRINDING MACHINE

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FIG_1_

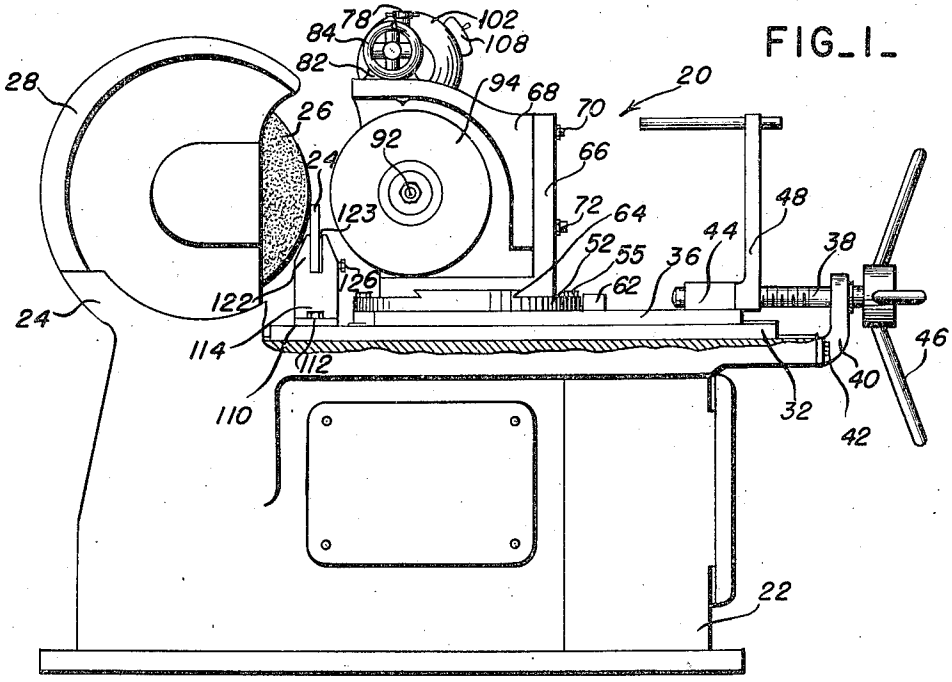
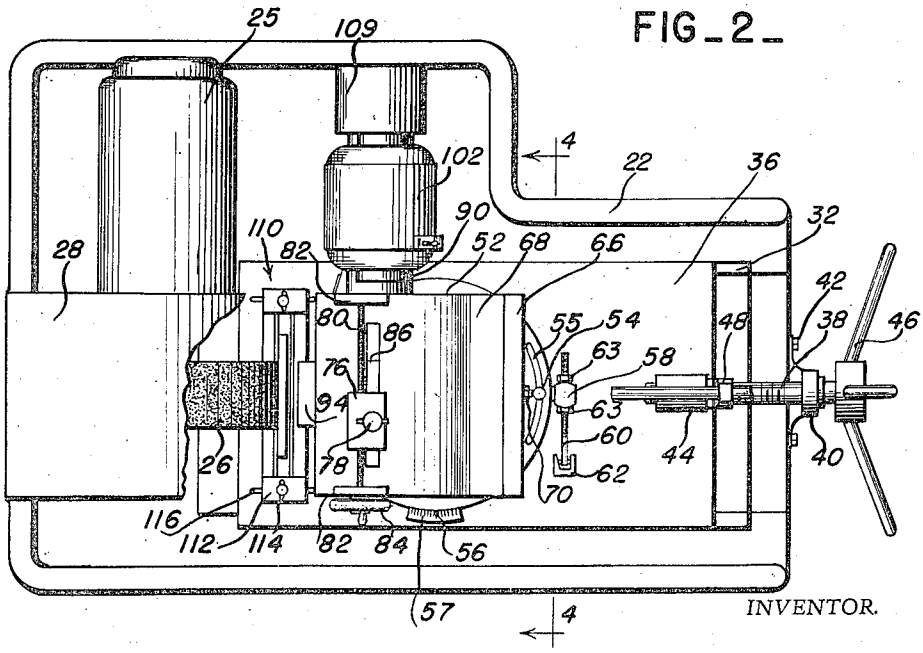


FIG_2_



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FIG. 3.

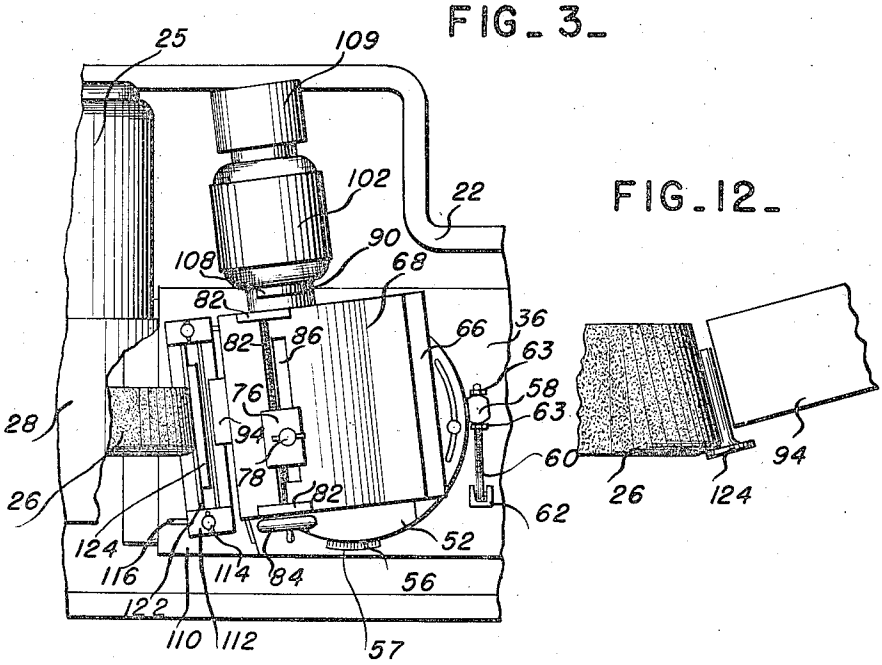
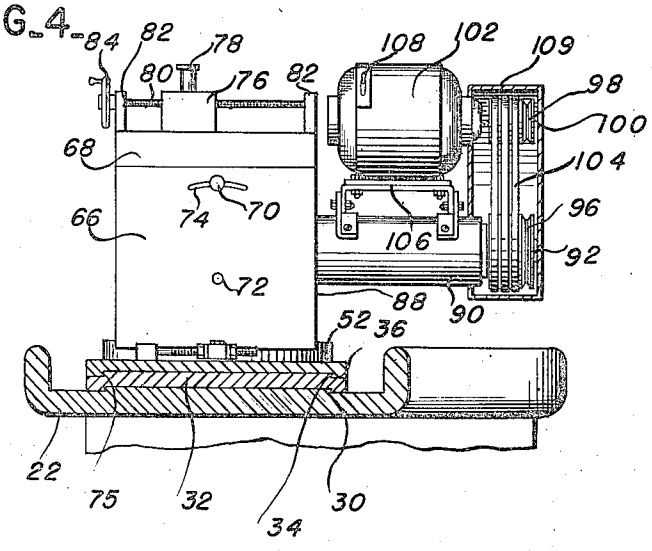


FIG. 12.

FIG. 4.



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FIG. 5.

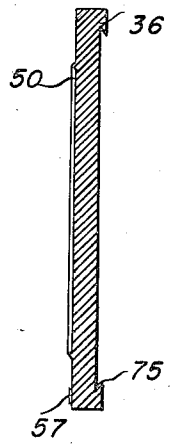


FIG. 6.

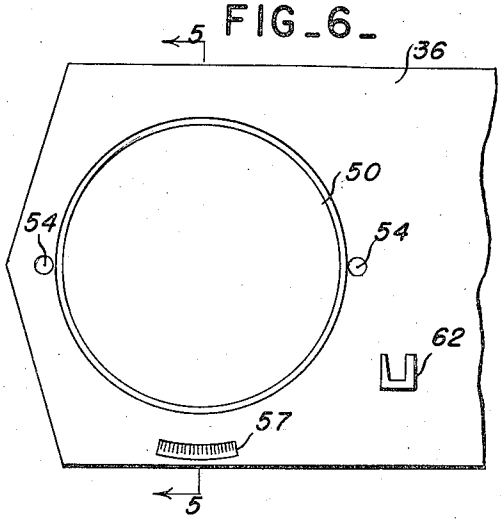


FIG. 7.

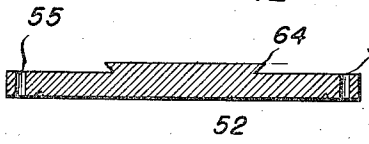


FIG. 8.

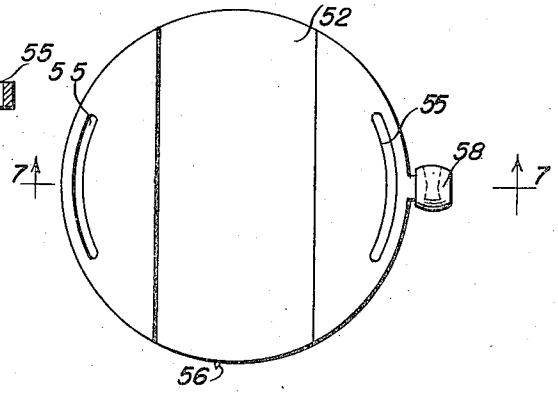


FIG. 9.

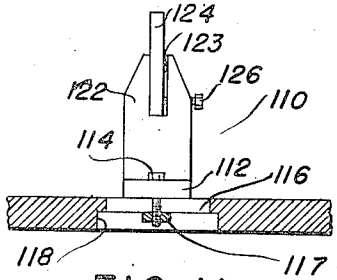


FIG. 10.

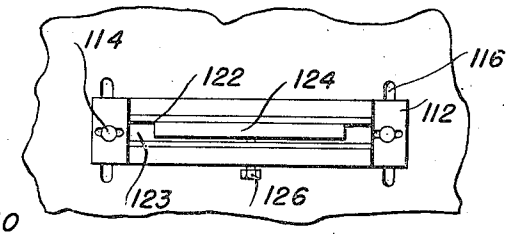
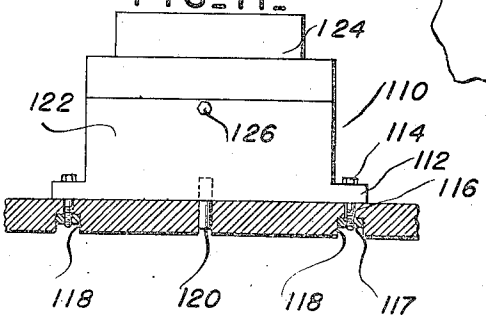


FIG. 11.



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Patented Apr. 5, 1949

2,466,478

UNITED STATES PATENT OFFICE

2,466,478

GRINDING MACHINE

James A. Riley, Hillsdale, Mich.

Application March 13, 1946, Serial No. 654,091

1 Claim. (Cl. 51—103)

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This invention relates to improvements in grinding machines and particularly to improvements in centerless grinders.

An object of the invention is to provide a machine for grinding two or more diameters of a work piece.

Another object of the invention is to provide a machine which will prevent undue wear of the regulating wheel.

A further object of the invention is to provide a machine wherein a revolving bed is provided for the regulating wheel whereby the regulating wheel can be adjusted at any angle with relation to the article being worked on.

With the foregoing and other objects and advantages in view the invention consists of the details of construction, arrangement and combination of parts more fully hereinafter described, claimed and illustrated in the accompanying drawings in which:

Figure 1 is an elevational view of an embodiment of the invention.

Figure 2 is a top plan view thereof.

Figure 3 is a detailed view of the machine in use at an angle to that shown in Figure 2.

Figure 4 is a sectional view on the line 4—4 of Figure 2.

Figure 5 is a sectional view on the line 5—5 of Figure 6.

Figure 6 is a detailed view of the bed for the regulating wheel.

Figure 7 is a sectional view on the line 7—7 of Figure 8.

Figure 8 is a plan view of the circular plate mounted on the bed shown in Figure 6.

Figure 9 is an end view of the work rest.

Figure 10 is a top plan view thereof.

Figure 11 is a side view of the work rest, and

Figure 12 is detailed fragmentary view of the regulating wheel and grinding wheel in position to grind a part.

Referring more in detail to the drawings the reference numeral 20 designates the machine comprising a bed 22, having rising therefrom at one end a pedestal bearing 24 in which is journalled a spindle and motor 25 for a grinding wheel 26. The wheel 26 is protected by a guard or housing 28 and the grinding wheel rotates in a clockwise direction.

The upper surface of the bed 22 is provided with guideways 30 for an adjustable bed plate 32, shiftable longitudinally of the bed 22 toward or away from the grinding wheel 26 and the bed plate 32 is provided with guideways 34 for a bed plate 36 which is shiftable longitudinally of the

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beds 22 and 32 by means of an adjusting screw 38 rotatably journalled in a bracket 40 secured to the outer end of the bed 22 by bolts 42. The screw 38 has threaded adjustment with a boss or lug 44 mounted on the outer end of the bed 36, and a hand wheel 46 on the outer end of the screw 38 effects rotation thereof, also mounted on the screw 38 adjacent the boss 44 is the locking control lever 48 for locking the bed 36 in position after it has been adjusted by the wheel 46.

The bed 36 is provided with a circular guideway 50 to mount the circular plate 52 thereon and elongated slots 54 in the plate adjacent the periphery and diametrically opposed to each other permit oscillation of the plate 52 which is limited by the bolts 55 passing through the slots 54 and receivable in the bed 36.

The plate 52 is provided with a pointer 56 which coacting with the graduated segmental scale 57 on the bed 36 indicates the degree of oscillation of the plate 52.

The rear of the plate 52 is provided with an apertured arm 58 to receive the adjusting screw 60 which is pivotally mounted on the bed 36 by means of the U-shaped block 62 secured to the bed 36. Nuts 63 on the screw 60 permit movement of the plate 52 either to the right or left by the adjustment thereof.

The plate 52 is provided with transverse guideways 64 to mount the L-shaped head plate 66 on which is secured the L-shaped bracket post housing 68 by means of the tilt bolt 70 and center pin 72. The tilt bolt being mounted in the arcuate slot 74 in the plate 66 and all the plates are provided with dovetails 75 to fit the guideways on the superposed bed and plates.

Mounted on the housing 68 for transverse movement thereof is the block 76 which mounts the diamond post and screw 78 and movement of the block 76 is accomplished by means of the screw 80 journalled in upstanding opposed lugs 82 on the housing 68, a hand wheel 84 causes oscillation of block 76 and post 78 by means of the slot 86 in the housing 68.

Formed integral with the side 88 of the housing 68 is the motor support 90 in which is journalled the shaft 92 of the regulating wheel 94 and multiple pulleys 96 on the shaft 92 have driving connection with the pulleys 98 on the motor shaft 100 of the motor 102 by means of belts 104 and the motor 102 is mounted on the support 90 by means of adjustable brackets 106 by which means the motor can be raised or lowered as desired to tighten the belts 104 and the motor is provided with a speed control 108 and

the pulleys and belts with a protective housing 109.

Mounted intermediately of the grinding wheel 26 and regulating wheel 94 is the work rest 110 having flanges 112 to receive bolts 114 which are mounted in the slots 116 and nuts 117 on the bolts 114 to tighten the rest to the bed 32 in slots 118.

The rest is provided with a center pin 120 and the uprights 122 are slotted at 123 to receive the part 124 which is secured in place by the bolt 126.

The part 124 can be any suitable part on which it is desired to work.

In Figure 12 the grinding wheel is shown with a taper and the regulating wheel has been adjusted so that it is parallel with the taper of the grinding wheel. Thus the regulating wheel will need no taper and the part worked on is in proper position for grinding. There is no slipping between the part and the wheels and the part will stay firm.

It can be seen that the bed plates can be adjusted longitudinally as well as the work rest and the regulating wheel can be oscillated to the right and left thus eliminating grinding of tapers on the regulating wheel and saving of the diamond in the post 78, thereby providing a more efficient type of grinder which can be more easily adjusted without the use of shims and a saving of parts.

It is believed that the operation of the grinder will be apparent to those skilled in the art and it is to be understood that changes in the details of construction, arrangement and combination of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claim.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

Means for supporting the regulating wheel housing of a centerless grinder for adjustment about a vertical axis and for adjustment horizontally with relation to said vertical axis comprising, a first bed plate which is adjustable horizontally with relation to the vertical axis, a second bed plate mounted on said first bed plate and adjustable along the same horizontal axis, operative means between said first and second bed plate to retain said bed plates in adjustable relation to each other, a third circular bed plate mounted on said second bed plate for oscillatory adjustment about the vertical axis, operative means between said second and third said bed plates to retain said bed plates in adjustable relation to each other, a feed screw connected to said second and third bed plates for adjustment of said third bed plate in relation to said second bed plate, means on said feed screw for retaining said plates in adjusted relation to each other, and L-shaped head plate mounted on said third bed plate for adjustment along the horizontal axis, said housing being mounted on said head plate and motor means carried by said housing for causing the rotation of said regulating wheel, and said bed plates permitting adjustment with relation to the angularity of the grinding means of said centerless grinder.

JAMES A. RILEY.

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