Feb. 27, 1962 H. B. BARRETT 3,022,610

GRINDER

Filed Oct. 14, 1958 4 Sheets-Sheet 1

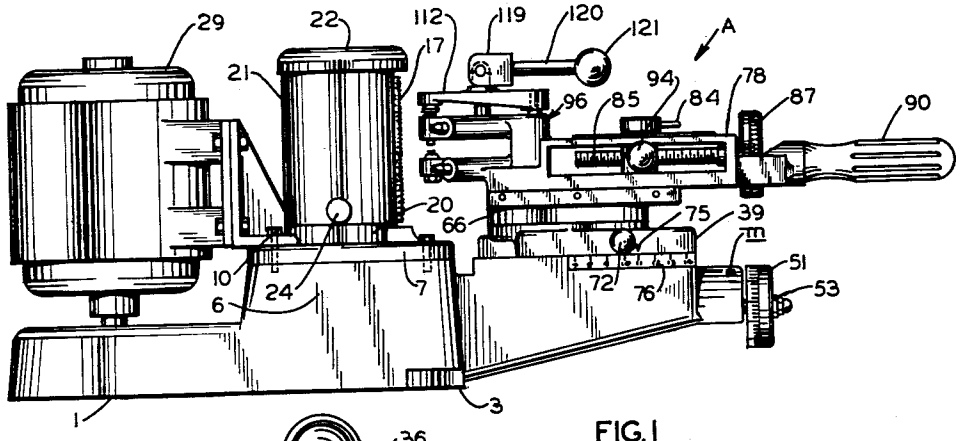


FIG. 1

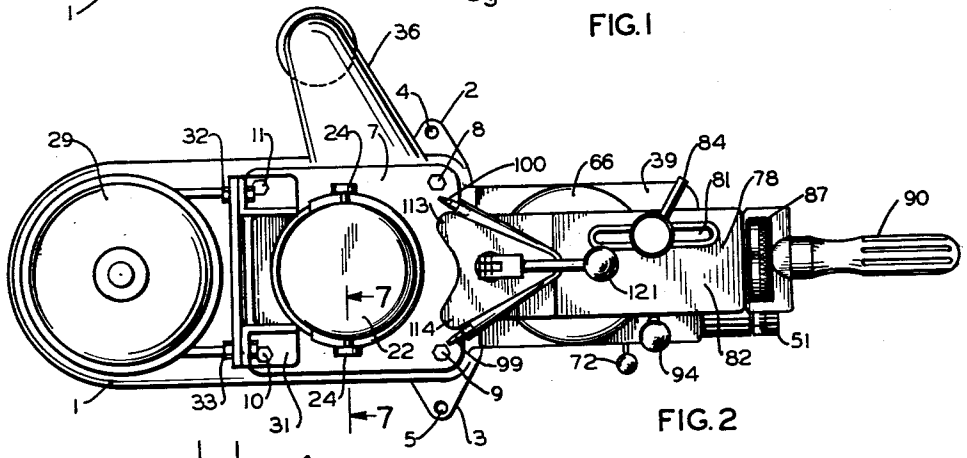


FIG. 2

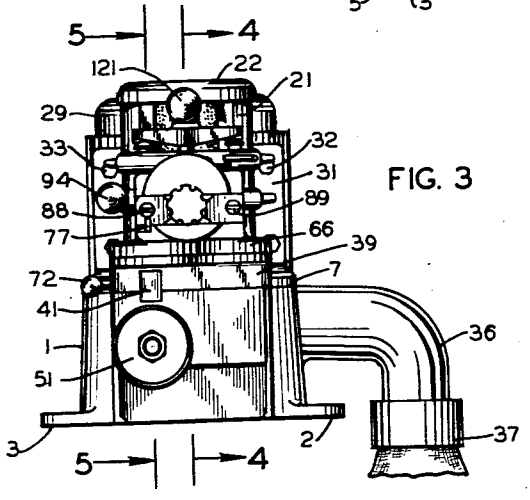


FIG. 3

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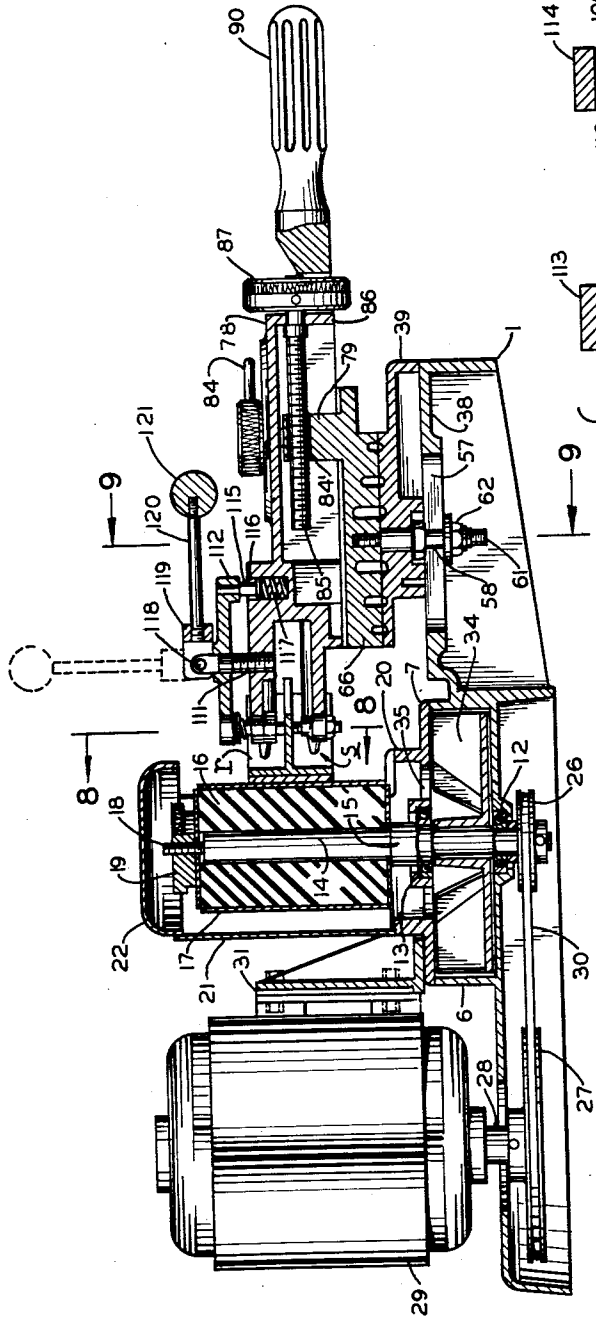


FIG. 4

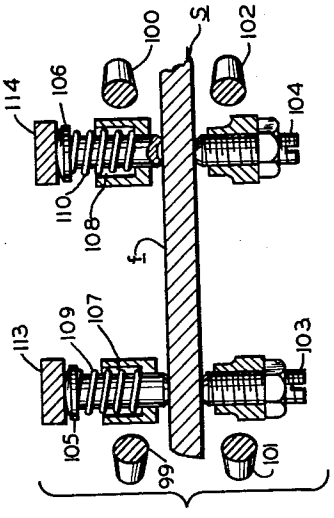


FIG. 8

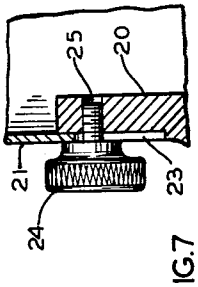


FIG. 7

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GRINDER

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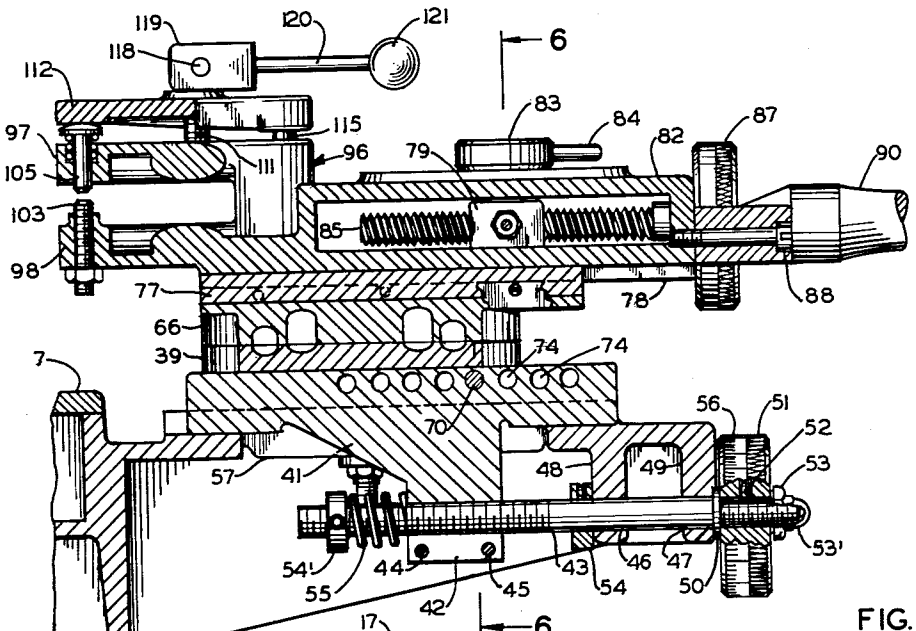


FIG. 5

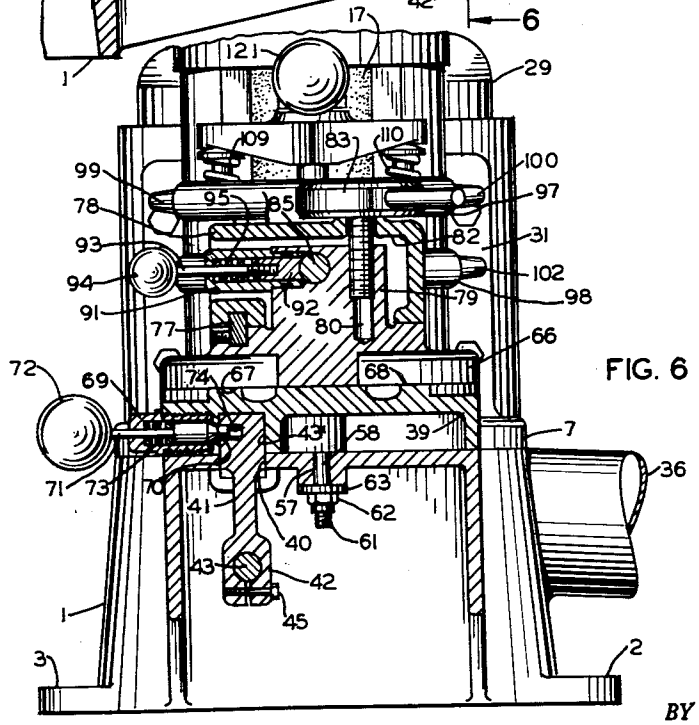


FIG. 6

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GRINDER

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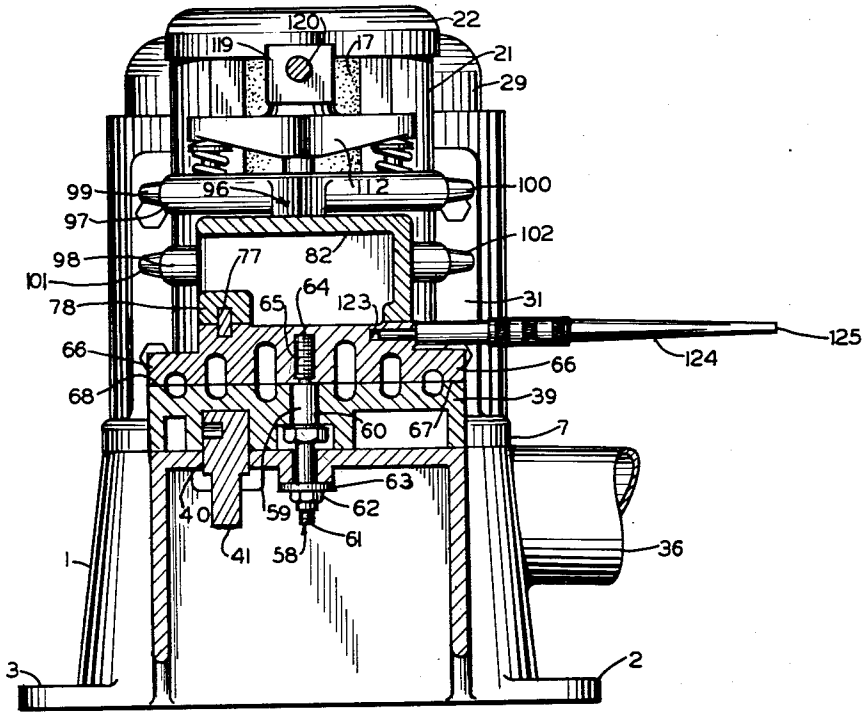


FIG. 9

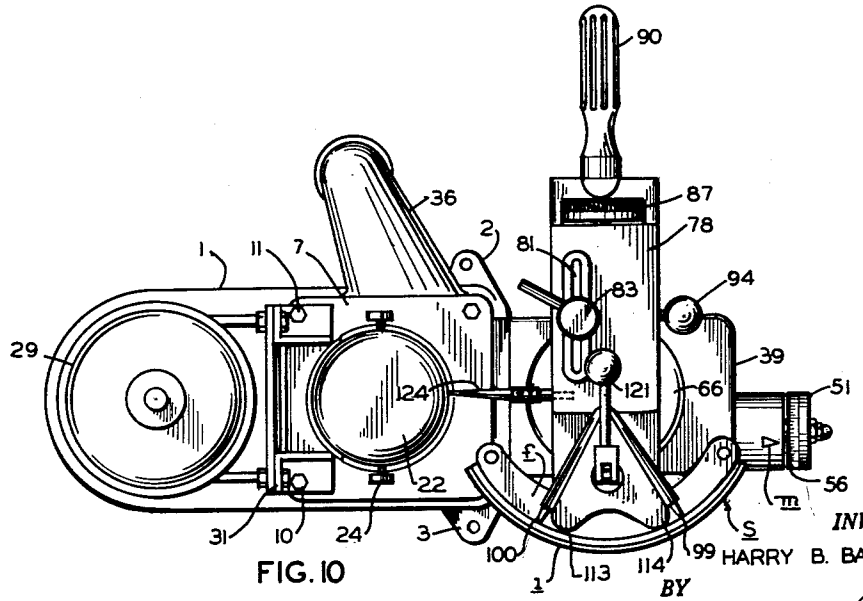


FIG. 10

United States Patent Office 3,022,610 Patented Feb. 27, 1962

3,022,610 GRINDER

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Filed Oct. 14, 1958, Ser. No. 767,192
7 Claims. (Cl. 51—96)

This invention relates, in general, to grinders and, more particularly, to certain new and useful improvements in grinders of the type adapted for grinding automobile brake linings, and the like.

It is a primary object of the present invention to provide a grinder for accurately dressing the drum-contacting surface of a brake shoe lining to a precise cylindric arc thereby achieving substantially perfect braking engagement between the brake shoe and companion brake drum.

It is also an object of the present invention to provide a grinder of the type stated which is quickly and easily adjusted so that the proper radius can be ground on the lining surface.

It is another object of the present invention to provide a grinder of the type stated having a work-holding fixture into which the brake shoes may be rapidly inserted and from which the brake shoes may be rapidly removed.

It is another object of the present invention to provide a grinder of the type stated wherein the brake shoe holder may be rapidly fed toward and retracted from the grinding element.

It is a further and more specific object of the present invention to provide a grinder of the type stated which includes a brake shoe holder swingable about a pivot point which is adjustable toward and away from a grinding element and wherein the accuracy of the distance between the pivot point and grinding element can be readily checked so as to insure precise calibration and accurate operation of the grinder.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (4 sheets)—

FIG. 1 is a side elevational view of a grinder constructed in accordance with and embodying the present invention;

FIG. 2 is a top plan view thereof;

FIG. 3 is a front elevational view thereof;

FIGS. 4 and 5 are fragmentary sectional views taken along lines 4—4 and 5—5, respectively, of FIG. 3;

FIG. 6 is a sectional view taken along line 6—6 of FIG. 5;

FIG. 7 is a fragmentary sectional view taken along line 7—7 of FIG. 2;

FIGS. 8 and 9 are fragmentary sectional views taken along lines 8—8 and 9—9, respectively, of FIG. 4; and

FIG. 10 is a top plan view of the grinder and showing the manner of calibrating the grinder.

Referring now in more detail and by reference characters to the drawings, which illustrate a practical embodiment of the present invention, A designates a grinder comprising a base 1 provided at its lower end with laterally outwardly projecting ears 2, 3, having holes 4, 5, by which the base 1 can be bolted to a suitable workbench (not shown). Integrally formed on the base 1 somewhat centrally thereof is a fan housing 6 having a cover plate 7 which is rigidly secured thereto by means of bolts 8, 9, 10, 11. Mounted in the housing 6 and cover 7 are vertically spaced, aligned bearings 12, 13, for rotatably supporting a drum shaft 14 which projects upwardly through the cover 7 and is provided adjacent the bearing 13 with an enlarged collar 15. Mounted on the shaft 14 and abutting the collar 15 is a cylindrical drum 16 having an abrasive sleeve 17 snugly and conformably

fitted over the outer surface thereof. At its upper end the shaft 14 is provided with a threaded portion 18 for receiving a hold-down nut 19, whereby the drum 16 is firmly secured on the shaft 14. Also formed on the cover plate 7 is an upwardly projecting annular flange 20 for receiving the lower end of an annular drum guard 21, the upper end of which is provided with a cup-like top 22. As seen by reference to FIG. 7, the lower end of the drum guard 21 is formed with slots 23 for receiving mounting screws 24 which are, in turn, threaded into holes 25 formed in the annular flange 20.

At its lower end the shaft 14 projects downwardly through the fan housing 6 and is provided with a pulley 26 which is in alignment with a pulley 27 mounted on the shaft 28 of an electric motor 29, and trained around the pulleys 26 and 27 is a drive belt 30. Preferably, the motor 29 is secured to a bracket 31 by means of bolts 32, 33, and the bracket 31 is also secured to the cover 7 by means of the bolts 10, 11. Mounted on the shaft 14 within the housing 6 is a fan 34 which is adapted to draw dust and abrasive particles through openings 35 in the cover 7 and discharges these particles through a conduit 36, the latter being formed on the base 1 and projecting laterally outwardly therefrom. If desired, the end of the conduit 36 may be provided with a removable dust collector bag 37.

Also integrally formed on the base 1 and extending forwardly therefrom is a horizontal wall 38 for slidably receiving a slide member 39, and also formed on the wall 38 is a slot 40 which slidably receives an elongated key 41, the lower end of which is provided with a split tapped boss 42 for receiving a micrometer-adjusting screw 43. The key 41, furthermore, projects upwardly into a slot 43' on the slide member 39 to form a slidable connection therewith. As best seen by reference to FIGS. 5 and 6, the micrometer-adjustment screw 43 extends in downwardly spaced parallel relation to the body of the key 41 and mounted in the split boss 42 are adjusting screws 44, 45, whereby the tightness of the threaded connection between the boss 42 and micrometer-adjustment screw 43 can be adjusted. The micrometer-adjustment screw 43 extends through holes 46, 47, formed in depending ribs 48, 49, and adjacent the rib 49 the micrometer-adjustment screw 43 is provided with an abutment collar 50. Mounted on the screw 43 adjacent the collar 50 is a calibrated dial wheel 51 which is adjustably held on the adjustment screw 43 by means of a set screw 52, and at its outer end the screw 43 is threaded for receiving a clamping nut 53 and a lock nut 53'. Adjacent the rib 46 the screw 43 is provided with a set collar 54, and at its rear end the screw 43 has a spring-abutment collar 54' mounted thereon. Encircling the screw 43 and bearing at its opposite ends against the spring-abutment collar 54' and boss 42 is a compression spring 55. Also provided on the end of the base 1 adjacent the dial wheel 51 is an indexing mark *m* which cooperates with the calibrated scale 56 on the dial wheel 51 and for purposes presently more fully appearing.

Mounted in the wall 38 and extending vertically through a lengthwise extending clearance slot 57 therein is a pivot-forming center bolt 58 provided with a shank portion 59 which is rotatable in a hole 60, the latter being formed in the lower slide 39. The bolt 58 is, furthermore, provided at its lower end with threads 61 for receiving a nut 62 which bears against a washer 63 disposed across the clearance slot 57. At its upper end the bolt 58 is provided with threads 64 for engagement with a tapped vertical hole 65 formed somewhat centrally of a turntable 66. Formed on the turntable 66 are downwardly presented machined surfaces 67 which are adapted to slide arcuately over the upwardly presented machined surfaces

68 of the lower slide 39 as the turntable 66 is rotated about the vertical axis of the bolt 58.

Threaded into the lower slide 39 and projecting laterally outwardly from one side thereof is a sleeve 69 having an indexing pin 70 shiftably mounted therein. Formed on the indexing pin 70 is a rod 71 which projects outwardly through the sleeve 69 and is provided on its outer end with a manipulating knob 72, and interposed between the sleeve 69 and indexing pin 70 is a spring 73. Formed in the key 41 at precisely spaced intervals lengthwise therealong is a plurality of holes 74 which are adapted to selectively receive the indexing pin 70. Preferably, the holes 74 are spaced one-half inch apart and, as seen by reference to FIG. 1, the slide 39 is provided with an index marker 75 which cooperates with a calibrated scale 76 mounted on the base 1. The scale 76 is calibrated in nominal standard brake diameters and is so related to the indexing mark 75 and position of the holes 74 that when the indexing mark 75 is opposite a numeral on the scale corresponding to a particular brake diameter, the indexing pin 70 will be positioned in one of the holes 74. The axis of the bolt 58 will then be located a distance from the edge of the abrasive sleeve 17 which is precisely the radius of the preselected brake diameter.

Mounted on the upper surface of the turntable 66 and projecting upwardly therefrom is a key 77 which receives a brake shoe supporting top-slide 78 and permits lengthwise sliding movement of the top-slide 78 on the turntable 66. Integrally formed on the turntable 66 and projecting upwardly into the top-slide 78 is a boss 79 provided with a tapped vertical hole 80 which is in alignment with a lengthwise extending slot 81 formed in a horizontal top wall 82 in the top-slide 78. Projecting downwardly through the slot 81 and threaded into the hole 80 is a clamping stud 83, the head of which is provided with a radially outwardly extending handle 84. Slidably projecting through a bore 84' in the boss 79 and extending lengthwise within the top-slide 78 is a rotatable feed screw 85 which extends through an end wall 86 in the top-slide 78 and is provided adjacent the end wall 86 with a feed wheel 87. Rigidly secured to the end wall 86 by means of bolts 88, 89, is a handle 90. Fitted into the boss 79 and extending laterally outwardly therefrom at right angles to the feed screw 85 is a sleeve 91 for shiftably receiving a half-nut 92, the threads of which engage the threads on the feed screw 85. Also provided on the half-nut 92 is a rod 93 which extends outwardly through the sleeve 91 and terminates in a knob 94. Mounted within the sleeve 91 and bearing against the half-nut 92 is a spring 95 which biases the threads on the half-nut 92 into engagement with the threads on the feed screw 85.

Integrally formed on the top-slide 78 at one end thereof is a brake shoe clamp 96 having spaced parallel plate-like arms 97, 98. Extending outwardly from the arms 97, 98, are brake shoe positioning pins 99, 100, 101, 102, which are adapted to contact the inner rim face *r* of a brake shoe *s* as seen in FIGS. 4 and 10. Also mounted at the outer ends of the lower arm 98 is a pair of vertically adjustable clamping studs 103, 104, which are aligned with and also cooperate with clamping pins 105, 106, for removably clamping the brake shoe flange *f*. As seen by reference to FIGS. 4 and 8, the clamping pins 105, 106, are mounted for vertical shifting movement in guides 107, 108, which are integrally formed at the outer end of the upper arm 97, and the clamping pins 105, 106, are normally biased upwardly by means of springs 109, 110. Threaded into the upper arm 97 in spaced parallel relation to the clamping pins 105, 106, is a vertical screw 111 which slidably projects upwardly through a clamping plate 112, the end portions 113, 114, of which are adapted to overlie and bear against the clamping pins 105, 106. Mounted in and projecting downwardly from one end of the clamping plate 112 is a pin 115 which projects into a vertical hole 116 formed in the clamping head 96 and bears against a spring 117 operatively mounted therein. Mounted on the upper end of the screw 111 is a pin 118 for rockably mounting a cam 119 which is adapted to bear against the clamping plate 112, and mounted in and projecting outwardly from the cam 119 is a lever 120 having a knob 121 threaded on the outer end thereof.

Also formed in the turntable 66 is a bore 123, the center line of which is located precisely at right angles to the axis of rotation of the center bolt 58. Provided for removable mounting in the bore 123 is a calibration gauge 124 which is accurately formed so that when mounted in the bore 123, as shown in FIGS. 9 and 10, the distance from the end 125 thereof to the axis of the center bolt 58 will be a precise predetermined value equal to a preselected nominal brake shoe radius. For example, the calibration gauge 124 may be of such size that the distance between the end 125 and axis of the bolt 58 is five inches, which corresponds to a brake diameter of ten inches.

In use, the clamping stud 83 is loosened and the knob 94 pulled outwardly releasing the threads on the half-nut 92 from engagement with the threads on the feed screw 85. While holding the knob 94 in this position, the handle 90 is grasped and pulled so as to rapidly shift the top-slide 78 to the left, reference being made to FIG. 1. The handle 94 may thereupon be released allowing the threads on the half-nut 92 to spring back into contact with the threads on the feed screw 85. Assuming that the abrasive sleeve 17 has just been installed on the cylindrical drum 16, the knob 72 is grasped releasing the indexing pin 70 from the hole 74 which is in alignment therewith. While holding the indexing pin 70 in this released position, the handle 90 is grasped and pulled, carrying with it the top-slide 78 together with the lower slide 39 and turntable 66, and thereby shift the center bolt 58 linearly toward the abrasive sleeve 17. As the indexing mark 75 coincides with the numeral "10" on the scale 76 the knob 72 is released allowing the indexing pin 70 to snap into the hole 74 in alignment therewith.

The calibration gauge 124 is then placed in the bore 123, whereupon the top-slide 78 and turntable 66 are rotated in unison, as shown in FIG. 10, until the end 125 of the gauge 124 just touches the surface of the abrasive sleeve 17. If the abrasive sleeve 17 has been newly installed, as is being assumed here for the present, the end 125 of the gauge 124 will ordinarily not touch the abrasive sleeve 17 at a point which is tangent thereto, i.e., the point which is in alignment with the axis of the shaft 14 and the axis of the bolt 58. If this occurs, the dial wheel 51 is rotated so as to rotate the micrometer adjustment screw 43 which, in turn, shifts the key 41 to the right, reference being made to FIG. 5. As the key 41 shifts it will carry with it the lower slide 39 and turntable 66 as well as the center bolt 58, thereby moving the end 125 away from the face of the abrasive sleeve 17. The handle 90 is then grasped and the top-slide 78 and turntable 66 are rotated a small amount to and fro about the axis of the center bolt 58. If the end 125 of the gauge 124 clears the face of the abrasive sleeve 17, the dial wheel 51 may be rotated in the other direction to shift the gauge 124 back toward the abrasive sleeve 17. The dial wheel 51 is thus adjusted until arcuate movement of the top-slide 78 and turntable 66 causes the end 125 to just barely contact the face of the abrasive sleeve 17. Thereupon, the set screw 52 and nuts 53, 53' may be loosened and the dial wheel 51 freely rotated until the zero marker thereon coincides with the indexing mark *m*, at which time the set screw 52 and nuts 53, 53' are tightened.

The distance between the abrasive sleeve 17 and axis of the center bolt 58 will now be precisely five inches, and since the center-to-center distance of the holes 74 is a precisely one-half inch, the indexing pin 70 will now be capable of locating the axis of the center bolt 58 at precise distances from the abrasive sleeve 17 corresponding to

nominal standard brake sizes. Thus, if the indexing pin **70** is in engagement with one of the holes **74** and the numeral "11" on the scale **76** coincides with the indexing mark **75**, the distance between the axis of the center bolt **58** and the face of the abrasive sleeve **17** will be exactly five and one-half inches. The scale **56** is preferably calibrated in thousandths of an inch so that the amount of over or under size of the brake can be readily translated to the calibrated dial **56** by merely turning the dial wheel **51** in either direction until the number of thousandths of an inch coincides with the indexing mark *m*. Consequently, when the dial wheel **51** is rotated it will turn the micrometer adjustment screw **43** and shift the axis of the center bolt **58** linearly toward the abrasive sleeve **17** one-half of the number of thousandths of an inch indicated on the calibrated dial **56**. In connection with the present invention, it will be apparent that while the gauge **124** is illustrated as being a "ten inch" gauge, a smaller or larger size of gauge may be used, in which case the indexing pin **70** will be set in a different hole **74**.

After the grinder A has been adjusted in the manner previously described, the gauge **124** is removed whereupon the clamping stud **83** may be loosened and the knob **94** pulled outwardly allowing the top-slide **78** to be shifted back along the turntable **66**. When it is desired to dress the brake shoe *s* the lever **120** is lifted to the vertical position, as shown in dotted lines in FIG. 4, whereupon the brake shoe *s* is placed between the arms **97**, **98**, with the positioning pins **99**, **100**, **101**, **102**, contacting the inner rim face *r*. The lever **120** is then shifted to the horizontal position, as shown in full lines in FIG. 4, causing the cam **119** to urge the clamping plate **112** downwardly in opposition to the force of the spring **116**. At the same time, the end portions **113**, **114** will bear against and press the clamping pins **105**, **106**, downwardly in opposition to the force of the springs **109**, **110**, and thereby firmly clamp the brake shoe flange *f* between the clamping studs **103**, **104**, and clamping pins **105**, **106**.

If, for example, the size of the brake shoe *s* is eleven inches the knob **72** is pulled backwardly and the handle **90** grasped so as to pull the top-slide **78**, lower slide **39**, and turntable **66**, until the indexing mark **75** is opposite the numeral "11" on the scale **76**, whereupon the knob **72** is released allowing the indexing pin **70** to snap into the hole **74** which is in alignment therewith. If the brake shoe lining *l* is to be ground a specified number of thousandths oversize, the dial wheel **51** is rotated until this specified number of thousandths appears opposite the indexing mark *m*. With the clamping stud **83** loosened, and the knob **94** grasped so as to pull the half-nut **92** away from the feed screw **85** the top-slide **78** may be quickly shifted toward the abrasive sleeve **17** until the brake lining *l* is just out of contact therewith. The knob **94** may then be released allowing the half-nut **92** to engage the feed screw **85** whereupon the motor **29** can then be switched on causing the drum **16** and abrasive sleeve **17** to rotate. The feed wheel **87** may then be readily manipulated to advance to the top-slide **78** and thereby feed the brake lining *l* into contact with the rotating abrasive sleeve **17**. The clamping stud **83** may then be tightened, whereupon the top-slide **78** and turntable **66** may be swung to-and-fro about the axis of the center bolt **58** so that the surface of the lining *l* passes across the abrasive sleeve **17**. The clamping stud **83** may then be loosened and the feed wheel **87** rotated to further advance the brake lining *l* into the abrasive sleeve **17**, at which time the clamping stud **83** may be tightened and the top-slide **78** and turntable **66** swung to-and-fro in the manner previously described. Thus, the brake shoe lining *l* is progressively fed into the abrasive sleeve **17** until the latter makes a complete smooth cut across the entire face of the lining *l*. At this time the lining will be shaped to the precise pre-selected size. The clamping stud **83** may then be loosened and the knob **94** grasped to release the half-nut **92**, whereupon the handle can be pulled so as to readily retract the top-slide **78**. The top-slide **78** may then be rotated and the lever **120** can then be lifted to the position shown in dotted lines in FIG. 4 allowing the clamping plate **112** and clamping studs **105**, **106**, to spring upwardly and release the brake shoe flange *f*.

After the abrasive sleeve **17** has been in use for some time, the diameter thereof may change slightly. Therefore, at periodic intervals it is desirable to calibrate the grinder A with the gauge **124** in the manner previously described so as to insure accurate operation of the grinder A.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the grinder may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

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

1. A brake shoe grinder comprising a base, a key having a plurality of spaced holes and being slidable on said base, a slide shiftable on said base, a spring biased pin operatively mounted in said slide and being selectively engageable in any one of said holes, means for shifting said key and slide unitarily along the base, a turntable shiftable with and rotatably mounted on said slide, a brake shoe holding slide shiftable along said turnable, and releasable cam means consisting of a rockable cam and lever that move rotatably in a single vertical plane, said cam means being operatively mounted in said brake shoe holding slide for urging spring-biased pin means into holding engagement with the brake shoe.

2. A brake shoe grinder comprising a base, a grinding element operatively associated with the base, a key having a plurality of spaced holes and being slidable on said base, a slide shiftable on said base, a spring biased pin operatively mounted in said slide and being selectively engageable in any one of said holes, a pivot-forming member operatively mounted in said slide, a turntable mounted on said pivot-forming member, a work holding slide mounted on and rotatable with said turntable, said work holding slide also being shiftable toward and away from said grinding element independently of said pivot-forming member, releasable cam means consisting of a rockable cam and lever that move rotatably in a single vertical plane, said cam means being operatively mounted in said work holding slide for urging spring-biased pin means into holding engagement with a brake shoe, and gauge mounting means for operatively supporting a removable spacer gauge whereby to locate the pivot-forming member with respect to the outer surface of said grinding element.

3. A brake shoe grinder comprising a base, slidable means shiftably mounted on said base, a slide shiftable on said base, means cooperating with the slide and slidable means for locking said slide in any one of a plurality of pre-selected points, a pivot-forming member operatively mounted in said slide, a turntable mounted on said pivot-forming member, means for shifting said pivot-forming member, turntable, and slide along said base, gauge-receiving means on said turntable and having an axis perpendicular to the axis of said pivot-forming member, a gauge removably mountable on said gauge-receiving means, said gauge, when in mounted position, being of such length that the outer end thereof will be spaced from the axis of said pivot-forming member by a precisely known distance, brake shoe holding means shiftably mounted on said turntable, shifting means threadedly mounted in said turntable and being provided at one end with a knob, a handle mounted on said turntable and being provided with a large slot, said handle being located on said turntable in such manner that said knob is located within said slot, whereby when said handle is used by an operator to rotate said turntable, the operator may simultaneously cause said shoe-holding means to

shift with respect to said turntable by rotating said knob with his fingers.

4. A brake shoe grinder comprising a base, a grinding element operatively mounted on the base, slidable means shiftably mounted on said base, a slide shiftable on said base, means cooperating with the slide and slidable means for locking said slide in any one of a plurality of pre-selected points, a pivot-forming member operatively mounted in said slide, a turntable mounted on said pivot-forming member, calibrated feed-screw means for shifting said pivot-forming member, turntable, and slide along said base, gauge-receiving means on said turntable and having an axis perpendicular to the axis of said pivot-forming member, a gauge removably mountable on said gauge-receiving means, said gauge, when in mounted position, being of such length that the outer end thereof will be spaced from the axis of said pivot-forming member by a precisely known distance, brake shoe holding means shiftably mounted on said turntable, whereby the turntable may be rotated and the calibrated feed-screw means operated until the gauge contacts the grinding element at a point tangent thereto, shifting means threadedly mounted in said turntable and being provided at one end with a knob, a handle mounted on said turntable and being provided with a large slot, said handle being located on said turntable in such manner that said knob is located within said slot, whereby when said handle is used by an operator to rotate said turntable, the operator may simultaneously cause said shoe-holding means to shift with respect to said turntable by rotating said knob with his fingers.

5. A brake shoe grinder comprising a base, a pivot pin on the base, an intermediate element rotatably mounted on the pivot pin, a work supporting slide shiftably mounted on the intermediate element, a handle extending outwardly from said slide by which the slide and said intermediate element can be manually swung to-and-fro about the pivot pin and being provided with a substantial aperture, feed means operatively interposed between the slide and intermediate element for shifting said slide lengthwise along the intermediate element, and manual operating means associated with the feed means for actuating said feed means, the manual operating means being located in said aperture of said handle so as to be operable by a finger of the hand which is gripping the handle.

6. A brake shoe grinder comprising a base, a grinding element operatively mounted on said base for rotation about a vertical axis, a turntable swingably mounted upon said base for rocking movement about a vertical axis in outwardly spaced parallel relation to the axis of the grinding element, a slide shiftably mounted on the turntable for adjustment toward and away from the grinding element, brake shoe support means mounted on the slide in proximate relation to the grinding element, a clamping plate also mounted on the slide and having portions disposed in overlying relation to the support means, pins shiftably mounted in the slide in axial alignment with and interposed between the support means and said portions of the clamping plate, spring means for normally biasing said pins upwardly away from the support means and toward said portions of the clamping plate, cam means for optionally urging the clamping plate toward the slide for bringing said pins to bear clampingly and retentively upon a brake shoe which has been interposed between the pins and the support means, and spring-biased counterbalancing means interposed between the slide and the clamping plate on the opposite side of the cam means with respect to said pins for holding the clamping plate substantially parallel to the slide as the cam means forces the clamping plate toward brake-shoe clamping position.

7. A brake shoe grinder comprising a base, a grinding element operatively mounted on said base for rotation about a vertical axis, a turntable swingably mounted upon said base for rocking movement about a vertical axis in outwardly spaced parallel relation to the axis of the grinding element, a slide shiftably mounted on the turntable for adjustment toward and away from the grinding element, brake shoe support means mounted on the slide in proximate relation to the grinding element, a clamping plate also mounted on the slide and having portions disposed in overlying relation to the support means, pins shiftably mounted in the slide in axial alignment with and interposed between the support means and said portions of the clamping plate, spring means for normally biasing said pins upwardly away from the support means and toward said portions of the clamping plate, cam means for optionally urging the clamping plate toward the slide for bringing said pins to bear clampingly and retentively upon a brake shoe which has been interposed between the pins and the support means, spring-biased counterbalancing means interposed between the slide and the clamping plate on the opposite side of the cam means with respect to said pins for holding the clamping plate substantially parallel to the slide as the cam means forces the clamping plate toward brake-shoe clamping position, a socket located on said turntable in fixed relationship to the center thereof, and a spacer gauge sized for snug-fitting engagement with said socket for purposes of locating the center of said turntable with respect to the surface of said grinding element.

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