June 24, 1930. J. E. BATIE 1,766,210

MACHINE FOR TURNING BRAKE DRUMS AND THE LIKE

Filed Oct. 12, 1925 3 Sheets-Sheet 1

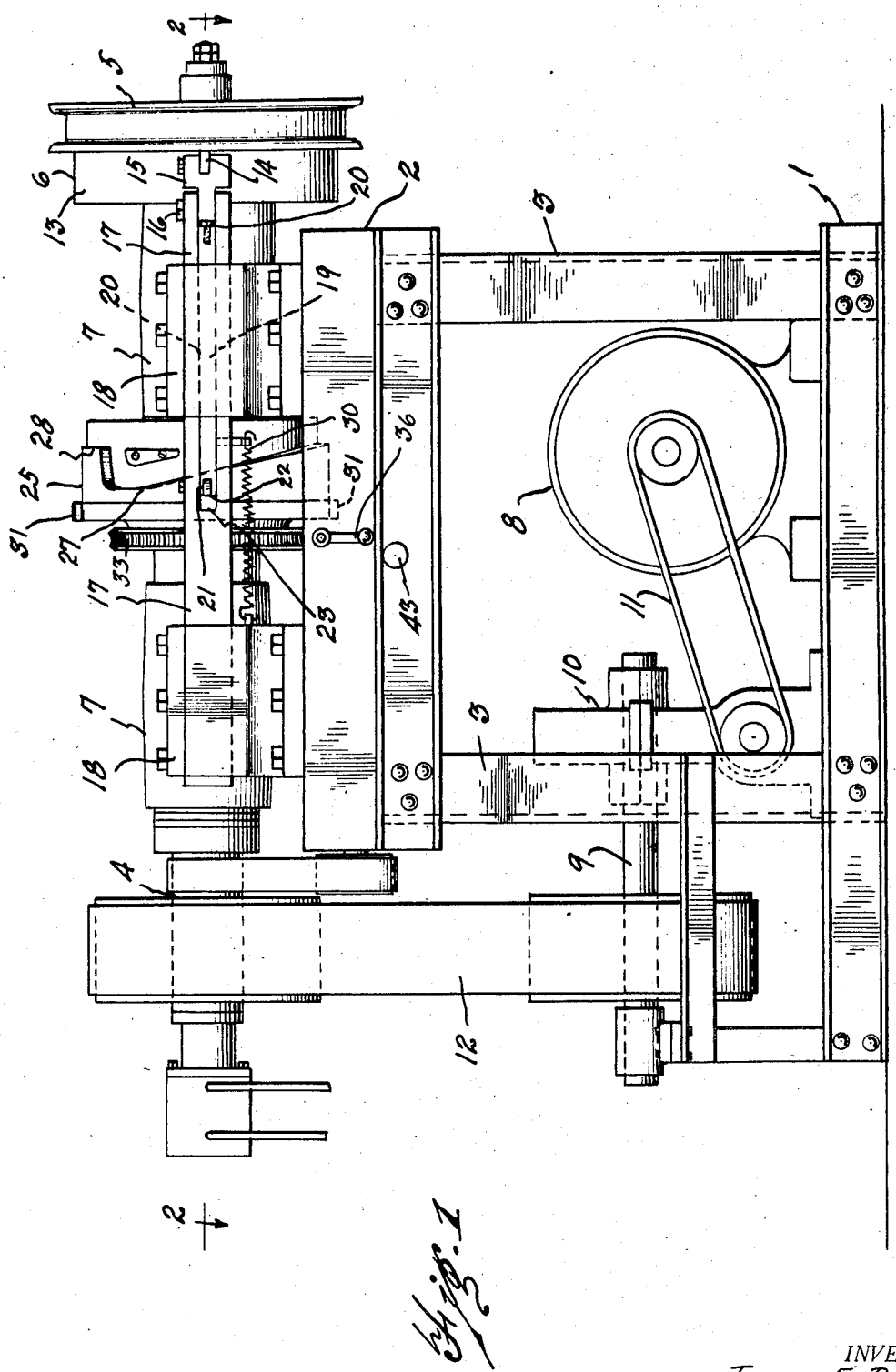


Fig. 1

INVENTOR.
JOSEPH E. BATIE

BY Whittemore, Hubbard & Whittemore & Bishop.

ATTORNEYS

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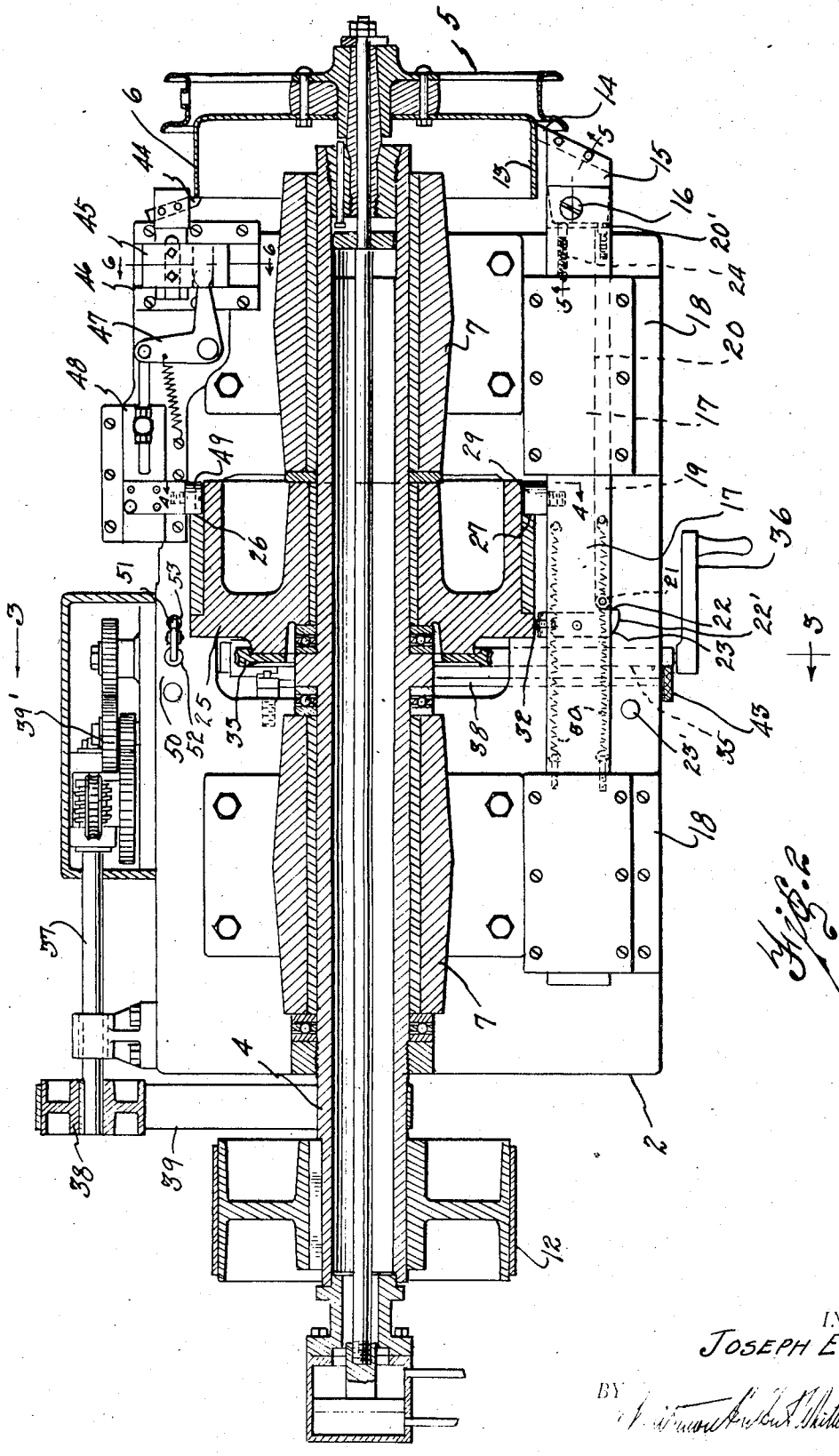


Fig. 2.

INVENTOR.
JOSEPH E. BATIE.

BY Wilson, Kirkpatrick, Whittemore & Redknap.

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MACHINE FOR TURNING BRAKE DRUMS AND THE LIKE

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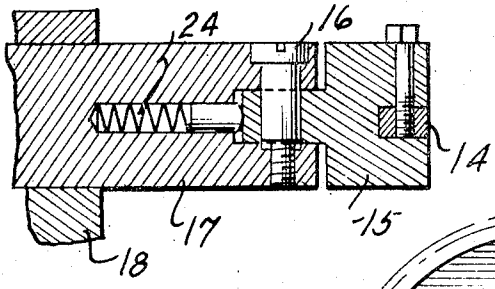


Fig. 5

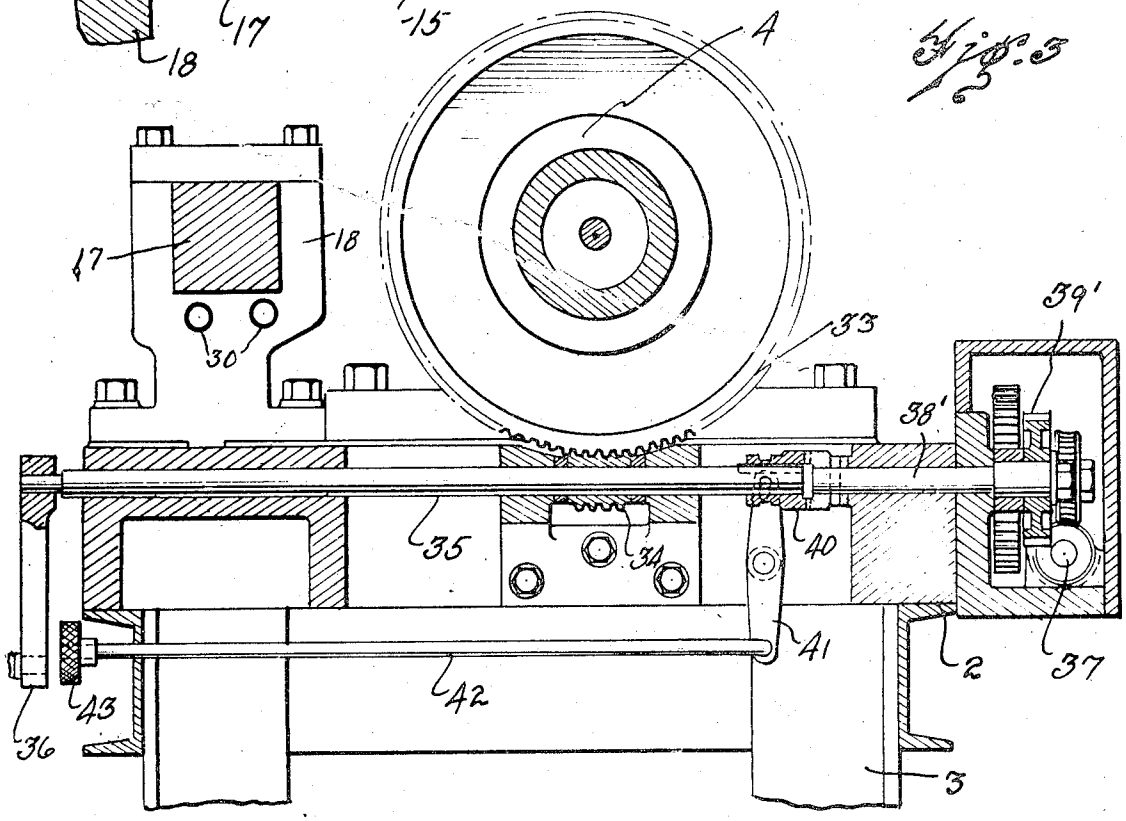


Fig. 3

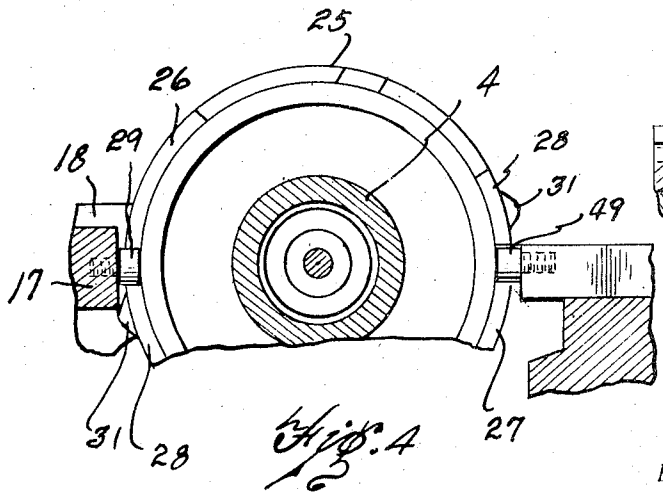


Fig. 4

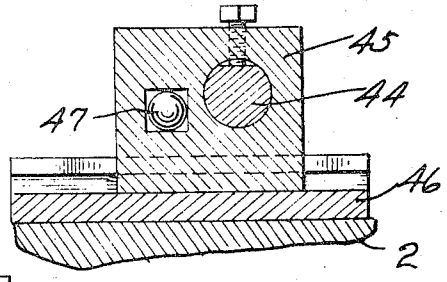


Fig. 6

INVENTOR.
JOSEPH E. BATIE

BY Whittemore & Hubbard & Whittemore & Belknap.

ATTORNEYS

Patented June 24, 1930

1,766,210

UNITED STATES PATENT OFFICE

JOSEPH E. BATIE, OF DETROIT, MICHIGAN, ASSIGNOR TO KELSEY-HAYES WHEEL CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF NEW YORK

MACHINE FOR TURNING BRAKE DRUMS AND THE LIKE

Application filed October 12, 1925. Serial No. 62,124.

The invention relates to machines for turning brake drums and has for one of its objects the provision of a machine which is so arranged that the brake drum may be mounted upon an end of the driving arbor. Another object is the provision of a machine in which the means for moving the cutter of the brake drum is arranged concentric with the driving arbor and furthermore driven from this driving arbor. Further objects are the provision of a pair of transversely movable cutters for the brake drum and a common means for moving these cutters; the provision of a support upon which one of the cutters is movably mounted and means for moving the support to move the cutter across and in engagement with the brake drum and for moving the cutter relative to the support and away from the brake drum; and the provision of driving means for the cutter actuating member, including reduction gearing and a clutch, the latter of which may be thrown out to permit manually returning the actuating member to starting position.

With these as well as other objects in view the invention resides in the novel features of construction and combinations and arrangements of parts as more fully hereinafter set forth.

In the drawings:—

Figure 1 is a side elevation of a brake drum turning machine embodying my invention;

Figure 2 is a cross section on the line 2—2 of Figure 1;

Figures 3, 4, 5 and 6 are cross sections on the lines 3—3, 4—4, 5—5 and 6—6 of Figure 2.

The brake drum turning machine has the bed 1 and the table 2 supported above the bed by means of the uprights 3. 4 is the revoluble driving arbor which supports at its front end the vehicle wheel 5 having the brake drum 6, this arbor being journaled in the bearings 7 mounted upon the table 2. These bearings are spaced longitudinally of the arbor and the front bearing is located adjacent to the front end of the arbor for holding the latter true and thereby maintaining as nearly true revolution of the vehicle wheel and its brake drum as possible. The arbor 4 is rotated by suitable means and as shown in the present instance this means comprises the electric motor 8 mounted upon the bed 1 and connected to the countershaft 9 by means of suitable reduction gearing in the housing 10 and the belt 11 extending between this reduction gearing and the drive shaft of the electric motor. The counter shaft is connected to the arbor by means of the belt 12 which runs around suitable pulleys secured to the counter shaft and the arbor, the pulley upon the arbor being at the rear end thereof and outwardly beyond the rear bearing 7.

For turning the brake surface of the brake flange 13 of the brake drum, this brake surface being in the present instance the external surface, I have provided the cutter or tool 14, which is inclined so that its cutting edge may engage the inner portion of the external surface of the brake flange, which is normally surrounded by the wheel felly. This cutter is secured to the holder 15 which is pivotally mounted at 16 upon the front end of the bar 17. This bar is guided by the spaced brackets 18 which are mounted upon the table 2, and is reciprocable in a direction parallel to the axis of the arbor 4. For normally holding the cutter in operative relation to the brake flange there is the bar 19 slidably engageable in the longitudinally extending slot 20 in the bar 17 and having secured to its front end the adjustable set screw 20′, which is engageable with the rear end of the holder 15 at a point offset from the pivot 16. 21 is a roller mounted upon the rear end of the bar 19 and normally engaging the raised or forwardly offset face 22 of the trip 23, which is transversely slidably mounted in the bar 17. 24 is a coil spring mounted in the front end of the bar 17 and adapted to engage the rear surface of the holder 15 offset on the opposite side of the pivot 16 for normally rotating the holder and thereby moving the cutter away from the brake flange.

For moving the cutter 14 across the brake

flange 13 I have provided the cam 25 revolubly mounted upon the arbor 4 between the bearings 7. This cam has on its periphery a pair of like inclined surfaces 26 and 27, which are connected at their ends by the plane surfaces 28 extending at right angles to the axis of the cam and providing a dwell. 29 is a roller secured to the bar 17 and engageable with the cam surfaces 26 and 27 and connecting plane surfaces 28 during the rotation of the cam, this roller being held against these surfaces by means of the coil springs 30 which are secured at their front ends to the bar 17 and at their rear ends to the rear bracket 18. The cam 25 is also provided with a pair of diametrically opposite outwardly extending projections 31 forming cam surfaces engageable with the roller 32 upon the inner end of the trip 23 at a time when the bar 17 has completed its forward travel. These cam surfaces are adapted to force the trip 23 laterally outwardly to disengage the raised or forwardly offset face 22 of the trip from the roller 21, allowing the latter with the bar 19 to move rearwardly under the force exerted by the coil spring 24 through the cutter holder 15, thereby moving the cutter 14 away from and out of engagement with the brake flange 13. The trip remains in its lateral outward position until the bar 17 returns to its original position so that the cutter will not mar the finish of the brake flange. The trip during the final portion of the return movement of the bar 17 is then forced laterally inward by means of the stationary pin 23′ engaging the cam surface 22′ of the trip.

For revolving the cam 25 I have provided the worm wheel 33 secured to the rear face of the cam and meshing with the worm 34 located below the worm wheel and secured upon the shaft 35, which extends transversely of the table and is journaled therein.

The hand crank 36 is provided at one end of this shaft and beyond the table for manually rotating the shaft. Furthermore the shaft may be rotated from the arbor 4 by means which may be disconnected from the shaft to allow the manual rotation thereof. In detail 37 is a counter shaft extending parallel to the arbor and mounted upon the table. At one end of this counter shaft there is the pulley 38 over which runs the belt 39, the other end of the belt running over the arbor. The counter shaft 37 is connected to the stub shaft 38′ which extends in alignment with the shaft 35 and is journaled in the table by means of suitable reduction gearing 39′. 40 is a clutch for operatively connecting the shaft 38′ to the shaft 35, this clutch being operated by suitable means such as the lever 41 and rod 42, the latter having a handle 43 located on the same side of the table as the handle 36. With this arrangement it will be seen that if desired the cam 25 may be mechanically driven from the arbor 4 or it may be manually driven independently of the driving connection between the cam and the arbor. This is an advantageous arrangement inasmuch as the cam may be mechanically rotated at a low rate during the turning operation of the brake flange and may then be brought to starting position manually and at a high rate.

44 is a second cutter which is movable transversly of the edge of the brake flange to trim the same. This cutter is adjustably mounted upon the slide 45 which is movable transversely of the table in the guide 46. 47 is a bell crank pivotally mounted upon the table and having one arm connected to the slide 45 and the other arm connected to the slide 48 mounted upon and guided by the table in a direction parallel to the axis of the arbor. This slide 48 has secured thereto the roller 49 which is located diametrically opposite the roller 29 and is also engageable with the cam surfaces 26 and 27 and the dwells 28. With this arrangement it will be seen that the cam controls the operation of both cutters 14 and 44. Also that this cam controls the movement of the cutter 14 away from the brake flange during the return movement of the cutter.

For the purpose of automatically stopping rotation of the cam 25 I have provided the electric switch 50 which controls the operation of the electric motor 8. 51 is a pivoted dog suitably mounted upon the table of the machine and having one arm adapted to engage the push button 52 of the switch 50 and the other arm adapted to engage a cam surface upon the cam 25, this cam surface being in the present instance either of the cam surfaces provided by the projections 31. The arrangement is such that during the rotation of the cam 25 the dog is swung to move its arm away from the push button 52 and then released, allowing this arm to come into contact with the push button with sufficient force to depress the same. A coil spring 53 is preferably provided for assisting in moving the dog with sufficient force to depress the push button, this coil spring being, however, insufficient to depress the push button without the assistance of the swinging of the dog under gravity.

In operation the electric switch 50 is preferably actuated to stop rotation of the cam 25 when the rollers 29 and 49 are engaging the dwells 28 of the cam and the trip has been forced laterally outwardly by one of the projections 31 of the cam. The wheel 5 may then be removed from the machine and replaced by another wheel and if desired the clutch 40 may be disengaged and the parts returned to their original or starting positions by means of the crank 36, at which time the rollers 29 and 49 have moved from the dwells to the inclined cam surfaces of the

cam and the trip 23 has returned to its normal position, thereby returning the cutter 14 to its normal position. This trip is preferably spring actuated so that its roller 32 will be held against the cam.

What I claim as my invention is:

1. In a machine for turning brake drums and the like, the combination with a revoluble arbor adapted to receive a brake drum, of a reciprocable bar movable parallel to the axis of the arbor, a cutter and cutter holder pivotally mounted upon said bar, means for normally urging said cutter away from the brake drum, said means including a yieldable member associated with said bar and engageable with the cutter holder at one side of the pivotal connection thereof to said bar, and means for holding the cutter into engagement with said drum including a member engageable with said holder at a point spaced from the point of contact between said yieldable member and holder and upon the opposite side of the pivotal connection aforesaid.

2. In a brake drum turning machine, the combination with a revoluble arbor adapted to receive a brake drum at one end thereof, of a reciprocable bar movable parallel to the axis of said brake drum, a cutter for the brake drum movably mounted upon said bar, a revoluble cam concentric with said arbor, means cooperating with said cam for actuating said bar to move said cutter across and in engagement with the brake drum and means cooperating with said cam for moving said cutter relative to said bar to move said cutter away from the brake drum.

3. In a brake drum turning machine, the combination with a revoluble arbor adapted to receive a brake drum at one end thereof, of a reciprocable bar movable parallel to the axis of said brake drum, a cutter for the brake drum, a holder for said cutter pivotally mounted upon the forward end of said bar, a cam for moving said cutter across the brake drum and for automatically stopping rotation of said arbor, and means for normally holding said cutter in operative relation to said brake drum.

4. In a brake drum turning machine, the combination with a revoluble arbor adapted to receive a brake drum at one end thereof, of a reciprocable bar movable parallel to the axis of said brake drum, a cutter for the brake drum, a holder for said cutter pivotally mounted upon the forward end of said bar, means for actuating said bar to move said cutter across and in engagement with the brake drum, means for normally holding the cutter in operative relation to the brake drum including a bar slidably mounted in said first mentioned bar and engaging said holder offset from the pivotal connection thereof to said first mentioned bar, and means associated with said first mentioned bar and adapted to engage said cutter holder offset upon the opposite side of the pivotal connection aforesaid, tending to rotate the holder away from and out of engagement with the brake drum.

5. In a brake drum turning machine, the combination with a revoluble arbor adapted to receive a brake drum at one end thereof, of a reciprocable bar movable parallel to the axis of the arbor having a longitudinally extending slot therein, a cutter for the brake drum, a holder for said cutter pivotally mounted upon said bar, means for moving said bar to move the cutter across and in engagement with the brake drum, and means for normally holding said cutter in operative relation to said brake drum including a bar slidably engageable in the longitudinally extending slot aforesaid and having one end adjustable secured to the cutter holder.

6. In a brake drum turning machine, the combination with a revoluble arbor adapted to receive a brake drum at one end thereof, of a reciprocable bar movable parallel to the axis of the arbor having a longitudinally extending slot therein, a cutter for the brake drum, a holder for said cutter pivotally mounted upon said bar, a revoluble cam concentric with said arbor for moving said cutter across the brake drum, a second bar slidably engageable in the longitudinally extending slot aforesaid having the forward end thereof engaging the cutter holder offset from the pivotal connection between the holder and first mentioned bar for normally holding the cutter in operative relation to the brake drum, a coil spring mounted in the forward end of said first mentioned bar and adapted to engage the cutter holder at a point offset on the opposite side of the pivotal connection aforesaid, tending to rotate the cutter holder away from the brake drum, a member slidably mounted in said first mentioned bar adjacent the rear end thereof having a portion normally engaging said second mentioned bar to hold the same in cutting position, yieldable means tending to urge said second mentioned bar rearward, and means upon said cam operable at a time when the first mentioned bar has completed its forward travel to disengage the member aforesaid from the second mentioned bar, allowing the latter to move rearwardly, thereby moving the cutter away from and out of engagement with the brake drum.

7. In a brake drum turning machine, the combination with a revoluble arbor adapted to receive a brake drum at one end thereof, of a bar reciprocable in a direction parallel to the axis of the brake drum, a cutter and a holder therefor pivotally mounted upon said bar, and cam controlled means for reciprocating said bar and for rocking said

cuttter holder about the pivotal connection aforesaid to move said cutter away from the brake drum.

8. In a machine of the character described, the combination with a revoluble arbor adapted to receive the work, of a member movable relative to said arbor, a cutter holder pivotally mounted upon said member, and a single cam member upon said arbor for actuating the member aforesaid and also for rocking said holder about the pivotal connection between said first mentioned member and cutter holder to move the cutter away from the work at the completion of the cutting operation.

9. In a machine of the character described, the combination with a revoluble arbor adapted to receive the work, of a cutter for the work, means for actuating the cutter including a member movable relative to said arbor, a pivotally mounted holder for said cutter and means upon said arbor for actuating the member aforesaid and for rocking said holder about the pivotal connection thereof in a plane substantially parallel to the axis of the arbor for moving the cutter away from the work at the completion of the cutting operation.

10. In a machine of the character described, the combination with a revoluble arbor adapted to receive the work, of a cutter for the work, means for actuating the cutter including a member reciprocable in a direction parallel to the axis of the arbor, a holder for said cutter pivotally mounted upon the member aforesaid and cam means upon said arbor for reciprocating said member and also for rocking the cutter holder about the pivotal connection thereof in a plane substantially parallel to the axis of the arbor for moving the cutter away from the work at the completion of the cutting operation.

In testimony whereof I affix my signature.

JOSEPH E. BATIE.