Feb. 28, 1956 J. E. CAMPBELL 2,736,222

CONTOUR ATTACHMENT FOR LATHES AND THE LIKE

Filed May 19, 1953

FIG. 1.

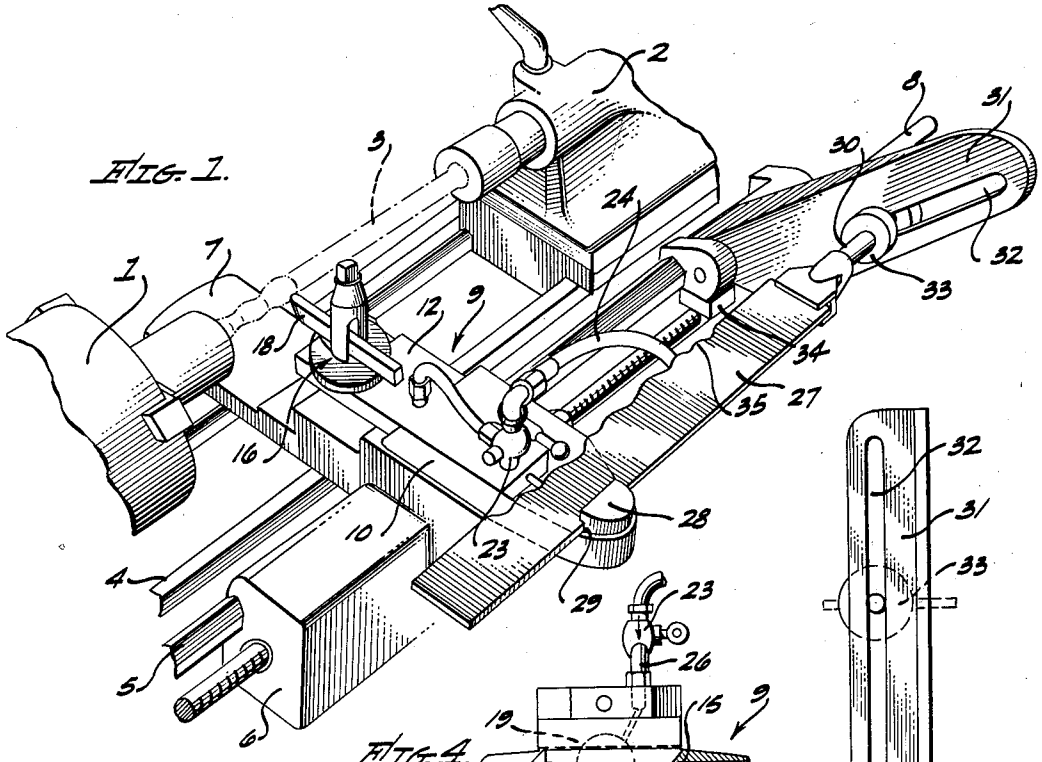






FIG. 4.




FIG. 5.

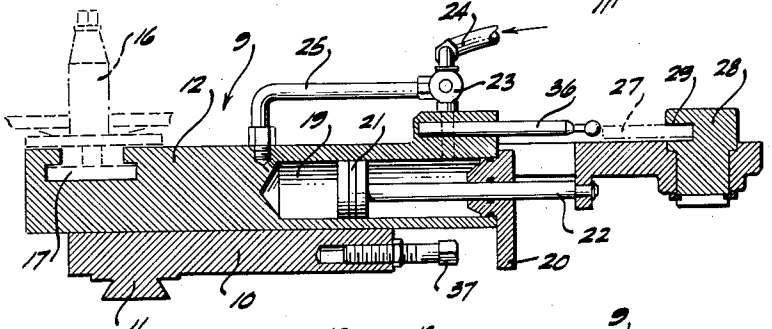



FIG. 3.

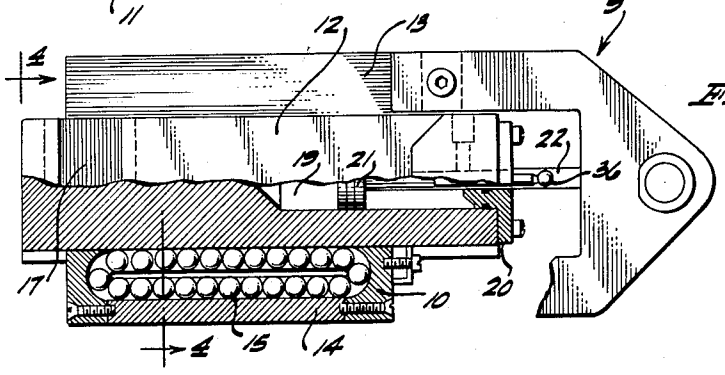



FIG. 2.

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2,736,222

# CONTOUR ATTACHMENT FOR LATHES AND THE LIKE

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Application May 19, 1953, Serial No. 355,953

1 Claim. (Cl. 82—14)

This invention relates to a contour attachment which can be applied to a lathe, an engine lathe, a turret lathe, a planer, as well as other similar machine tools.

An object of my invention is to provide a novel contour attachment of the character stated in which the cutting tool is moved relative to the work by the combined action of air pressure and the cam surfaces of a contour plate.

Another object of my invention is to provide a novel contour attachment of the character stated in which the contour plate is mounted on the bed of the lathe, or the like, in a novel manner.

A feature of my invention resides in the novel means whereby the slide plate of the contour attachment can be moved by means of air pressure exerted on either side of a stationary piston.

Another feature of my invention resides in the novel means of mounting the slide plate between ball races in the main body or frame of the attachment.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claim.

In the drawing:

Figure 1 is a fragmentary perspective view of a lathe with my contour attachment mounted thereon.

Figure 2 is a top plan view of my contour attachment with parts broken away to show interior construction.

Figure 3 is a longitudinal sectional view of my contour attachment.

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

Figure 5 is a side elevation of the bracket for the contour plate.

Referring more particularly to the drawing, the usual engine lathe consists of a chuck 1 and a tailstock 2 between which the work 3 is mounted and rotated in the usual manner. The bed 4 of the lathe consists of the usual tracks 5 along which the carriage 6 and the cross-slide move. The carriage 6 is moved lengthwise of the lathe by the feed screw 8, either automatically or manually, as may be desired. With my contour attachment 9 it is possible to complete the machining of the work 3 automatically and without special attention of the operator, this being accomplished in the following manner:

A base 10 is mounted on the cross-slide 7 in a suitable manner, preferably by means of the dovetail 11 which fits a usual groove in the cross-slide of the lathe. A slide plate 12 is mounted on the base 10 for limited longitudinal movement on this base, as will be further described. The slide plate is guided between the sides 13—14 of the base 10 and it bears against ball races 15 in each of the sides 13 and 14. This provides a ball bearing mounting for the slide plate so that it will move back and forth very easily. A tool rest 16 is mounted on the slide plate 12 in a suitable manner, preferably in the groove 17. The tool 18 held in the rest 16 is pressed against the work 3, substantially as shown in Figure 1, and in a manner to be subsequently described. A cylinder 19 is formed in the slide plate 12 and this cylinder



is closed at its outer end by the plate 20 which is suitably secured to the side plate. A piston 21 is positioned within the cylinder 19 and the piston rod 22 extending from the piston is attached at its outer end to the base 10. Thus the piston 21 will be held stationary while the slide plate 12 can move back and forth relative to the piston. An air valve 23 has an intake pipe 24 extending to it, and outlet pipes 25 and 26 extending to the inner and outer ends, respectively, of the cylinder 19. Thus air can be directed to either side of the piston 21.

A contour plate 27 is fixedly mounted at one end on the bed 4 of the lathe. The contour 27 fits into a swivel 28 on the base 10. The swivel is slotted, as shown at 29, to receive the contour plate and the entire contour attachment can slide lengthwise of the contour plate by reason of this mounting. A pin 30 is pivotally attached to one end of the contour plate 27 and this pin is attached to the bracket 31 which is secured to the track 5 of the lathe. The bracket 31 is formed with a slot 32 and the pin 30 extends through this slot and is held in adjusted position by means of a nut 33. The bracket 31 is machined to fit the track 5 and a plate 34 is bolted onto the bracket 31 and against the track 5, thus holding the bracket securely in position.

The contour plate 27 is formed with a suitable contour or cam surface 35 on its inner edge and this camming surface is followed by the stylus 36 which protrudes from the inner face of the slide plate 12. To limit the movement of the slide plate 12 in one direction, a stop bolt 37 protrudes from the base 10 and is engaged by the plate 20 to thus limit the movement of the slide plate in one direction.

In operation the contour plate 27 is mounted as shown in Figure 1 so that the contour attachment 9 can slide lengthwise thereof, the contour plate being guided by the swivel 28 on the base 10. Air pressure is now admitted into the cylinder 19 between the piston 21 and the plate 20. Since the piston 21 is stationary, the slide plate 12 will be pressed to the right, as viewed in Figure 3. This presses the stylus 36 against the contour or cam surface 35. It will thus be evident that the slide plate 12 is pressed towards the right, as viewed in Figure 3, by means of air pressure at all times. Movement of contour plate 12 to the left is accomplished by the stylus 36 following a cam surface 35 on the contour plate 37. That is, the slide plate 12 is cammed towards the left, as viewed in Figure 3, by the stylus 36 moving over a cam surface and is urged to the right, as viewed in Figure 3, by air pressure acting against the plate 20. Since air is compressible it acts like a spring and, consequently, the slide plate can move back and forth to accurately follow the contour on the edge of the plate 27.

Having described my invention, I claim:

A contour attachment for lathes and the like, comprising a base, mounting means on the base for attachment to a lathe carriage, a contour plate, a swivel journaled in said base, said swivel having a slot therein in which the contour plate fits and is slidably supported, a bracket, means on the bracket securing said bracket to the bed of a lathe, a pin pivotally attached to one end of the contour plate, and means securing the pin to the bracket, a slide plate mounted on the base for horizontal movement thereon, a stylus projecting from the slide plate and bearing against one edge of the contour plate, a tool rest on the slide plate, said slide plate having a cylinder therein, a piston in the cylinder, means mounting the piston on the base, and conduit means conveying pneumatic pressure to one side of said piston, and a ball race in the base on each side of the slide plate, said slide plate bearing against the ball races in its horizontal movement.

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