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ROLLER BOX OR STEADY FOR LATHES AND LIKE MACHINES

Filed May 20, 1943

Fig. 1.

Fig. 2.

Fig. 3.

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This invention relates to roller boxes or steady boxes for lathes and has for its object to provide a roller box or steady which can be used for profile turning and when not so required can be used as an ordinary roller steady.

The invention consists in a profile turning roller box comprising a frame with a part to be secured in a lathe and having steady rollers (to ride upon the stock or workpiece) mounted therein on adjustable slides, a lever pivotally mounted in said frame with an adjustable pin at one end bearing upon a profile bar extending through and from the frame, a spring loaded plunger at the other end of said adjustable pin in engagement with said profile bar, and means for securing and adjusting the cutting tool in the lever, the profile bar being moved endwise automatically as the roller box passes over the stock or workpiece being turned.

The invention further comprises the arrangement in which the profile bar is coupled to a steady bar parallel with it which passes through the frame, with a centre piece on the coupling bar which is adapted to engage the end of the stock or workpiece as the box passes over it so as to control the endwise movement of the profile bar.

Referring to the accompanying sheet of explanatory drawings—

Figure 1 is a side elevation, Figure 2 a plan view and Figure 3 an end view of a roller box or steady constructed in one convenient form in accordance with this invention.

The roller box or steady comprises a frame a which has a rearward extension a' and a plunger-like end b to be secured in a lathe, as for example in the turret of an automatic lathe. Pivotally secured to the end face of a said frame is a lever c with a rearwardly projecting fulcrum pin d which passes through a hole in the frame and is secured by a nut e which threads and is pinned on d. The said lever carries two screw clamps j for a cutting tool g. It also carries at one end a plunger h (loaded by a spring h') which bears upon a fixed surface i on the frame. At the other end, the lever has mounted therein a pin f (which is adjusted by a screw k and locked by a screw k') which is adapted to bear upon the profile bar m which is profiled by being flatted along one side. The bar m is guided and slides freely through the frame a and at its rear end is secured to one end of the coupling bar n which at its other end is secured to a steady bar o guided by and sliding freely through the frame a parallel to the profile bar m.

The bar n is secured to a centre piece p which is adapted to bear upon the end of the workpiece (not shown) as it passes between the rollers q and r and tool g.

The steady rollers q and r are mounted in slides s and t which are adjusted in position by turning the screws u which move the washers u' engaging slots v in the slides. The latter are locked by the screws w. The steady rollers bear upon the workpiece slightly behind the part being turned by the tool g so that the slides s and t can be set to suit the diameter of the workpiece and are unaffected by the profiling operation.

In service, the steady rollers q and r are adjusted so that they will ride on the stock or workpiece and be rotated thereby. The proper profile bar m is secured in position and in the coupling bar n which is drawn fully forward, that is to the right in Figure 1. The tool g is then adjusted by the screw g', and the screw k adjusts the pin f which bears on the profile bar m to cause the tool g to turn to the required diameter.

As the roller steady box passes over the stock or workpiece, the centre piece p which engages the end of the workpiece presses the coupling bar n, the profile bar m and the steady o backwards with relation to the frame a, so that the lever c is moved about its fulcrum by the pin f pressing on the profile bar, causing the tool g to turn the stock or workpiece to the required profile or contour.

With the roller box described, stock with two, three or more diameters can be turned with one pass of the box, thus eliminating the use of two or more roller boxes and therefore leaving open turret stations which can then be used for other operations. Great saving in production time is therefore ensured.

When profile turning is not required, the profile bar m, the coupling bar n and the steady bar o are removed, and a plain bar is placed in the hole vacated by the profile bar m.

Plain tapered work and work with increasing diameters can be profiled with a square faced tool. Work with recesses or decreasing diameters will require the tool h to be ground with a double angle or with a sharp back angle in order to allow the tool to sink into the work easily.

What I claim is:

1. A profile turning roller box comprising a frame with a part to be secured in a lathe, steady rollers to ride upon the workpiece mounted in said frame upon adjustable slides, means to rigidly secure said slides in adjusted position on said frame, a profile bar guided by and sliding freely
through said frame, a holder for a cutting tool movably mounted in said frame, the cutting tool being located in advance of the steady rollers, means engaging said profile bar and moving said holder, and means adapted to engage the end face of the workpiece for moving the profile bar as the roller box passes over the workpiece being turned.

2. A profile turning roller box comprising a frame with a part to be secured in a lathe, steady rollers to ride upon the workpiece mounted in said frame on adjustable slides, a profile bar guided by and sliding freely through said frame, a steady bar parallel to the profile bar also guided by and sliding freely through said frame, a coupling bar connecting the profile bar and steady bar, a holder for a cutting tool mounted for movement in said frame, the cutting tool being located in advance of the steady rollers, means engaging said profile bar and moving said holder, a part mounted in said coupling bar and adapted to engage the end face of the workpiece so as to move the profile bar endwise relatively to the frame as the roller box passes over the workpiece being profile turned.

3. In a profile turning roller box as claimed in claim 2, wherein the tool holder comprises a lever with tool clamping means therein, said lever being pivoted in the frame, a spring loaded plunger bearing upon a part of the frame at one end of the lever, and an adjustable plunger in the other end of the lever.

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