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RACK AND PINION DEPTH-OF-CUT ADJUSTING MECHANISM FOR PORTABLE ROUTERS

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3 Claims

ABSTRACT OF THE DISCLOSURE

An adjusting mechanism for portable routers combines two knobs equally accessible and positioned in spaced relation on opposite sides of a rack and operatively associated with a hollow shaft carrying a pinion for moving the rack. One knob is locked for rotation with the shaft and the other knob is frictionally coupled to the shaft. A single metal part is required which is simple in form and the more complex parts are formed by molding to provide a low-cost easy assembly secured by a single fastening element.

Background of the invention

In prior art adjusting mechanisms for routers of which I am aware, the zero set adjustment is made by a sleeve which is located closely adjacent to the adjusting knob and is of smaller diameter than the knob and is accordingly difficult to manipulate with facility and independently of the knob. The prior art pinion structure has heretofore required a rather complex multi-diametral metallic part which has been difficult and costly to fabricate and assemble.

Summary of the invention

This invention relates to rack and pinion depth-of-cut adjusting mechanisms for portable routers and more specifically to such mechanisms which incorporate a zero-set feature to facilitate the adjustment.

Accordingly one object of this invention is to provide a zero-set knob removed from adjacency with respect to the depth-of-cut adjusting knob and of a relative size to be as readily accessible as the adjusting knob itself.

A further object of this invention is to provide a pinion assembly for a depth-of-cut adjusting mechanism which requires a minimum of simple metallic parts, the major portion of the mechanism being adapted for fabrication by molding from inexpensive non-metallic materials.

Another object of this invention is to provide a pinion shaft which is journaled in a single through bore made in relatively rigidly fixed lugs spaced on opposite sides of the rack with which the pinion meshes.

These and other objects of the present invention will become apparent from a reading of the following specification taken in conjunction with the drawings.

Brief description of the drawings

FIG. 1 is a front elevation view of a portable electric router embodying the invention.

FIG. 2 is a top plan view of the router of FIG. 1 with parts cut away to show sectional views of the structure of this invention.

FIG. 3 is a detailed disassembled perspective view of the depth-of-cut adjusting mechanism for the router of FIG. 1.

Description of a preferred embodiment

Referring now to FIG. 1, a portable electric router is shown having a stationary base 10 of generally hollow cylindrical form. The base 10 is formed with two downwardly extending diametrically opposed leg portions 11—
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36 and 40 in clamped relation with slight end-play with respect to the lugs 59–60. The bearing portion 46 is journalized in the seat 35 and the flanged sleeve 39 is journalized in the seat 34 and this structure provides automatic alignment of the parts inasmuch as the seats 34 and 35 are formed by a single boring operation.

The zero-set knob 40 has a reduced diameter portion 51 which carries circumferentially-spaced graduation marks 52 on its surface. A semicylindrical cover-plate 53 is secured to the front wall 31 by means of screws 54–54 and covers the pinion assembly permitting only the knurled portions of each of the knobs 38 and 40 to be exposed at each end thereof for manipulation. A window 55 formed in the cover-plate 53 is provided with a fixed reference mark 56 to enable the graduation marks 52 to be viewed so that the zero-set knob may be selectively rotated to any desired initial annular index setting with respect to the angular position of the pinion shaft 37.

In the above-described structure it will be noted that the only metallic part required is the pinion shaft 37 which is a relatively simple two-diameter piece. All the other parts are readily formed by molding from nonmetallic and inexpensive materials. The assembly is simple and requires but a simple conventional fastening element and results in an effective depth-of-cut adjusting mechanism having a distinctive quality appearance attainable at low cost.

Having thus set forth the nature of this invention, what I claim herein is:

1. In a portable electric router having a work-engaging base, a motor housing axially adjustable therein and means for clamping the motor housing and base in selected relative axial positions; a depth-of-cut adjusting and calibration means comprising:
   (a) a rack longitudinally secured on said motor housing,
   (b) a pair of lugs formed on the base in fixed spaced relation on opposite sides of the rack and having aligned cylindrical apertures,
   (c) a hollow pinion shaft carrying a pinion in engagement with the rack,
   (d) opposite end portions of the pinion shaft extending through the aligned apertures,
   (e) an adjusting knob carried on one end of the pinion shaft for rotation therewith,
   (f) a sleeve having a flanged portion and carried on the other end of the pinion shaft for rotation therewith,
   (g) said pinion shaft and said sleeve each having a bearing portion journalized in a respective lug aperture,
   (h) a zero-set knob frictionally coupled to said sleeve and retained thereon by the flanged portion of said sleeve, and
   (i) single fastening means passing through said adjusting knob, said hollow pinion shaft and said sleeve to secure these parts in coupled relation for rotation as a unit.

2. Mechanism in accordance with claim 1, wherein the zero-set knob has circumferentially spaced graduation marks on a surface portion thereof and a cover-plate removably secured to the base has a window with a stationary index mark for visually setting said zero-set knob to align any one of said graduation marks with said reference mark.

3. Mechanism in accordance with claim 1, wherein a cover-plate removably secured to the base provides with said base a closure for the mechanism leaving the knobs exposed at each end substantially as a continuation of the cover.

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