

March 7, 1944.

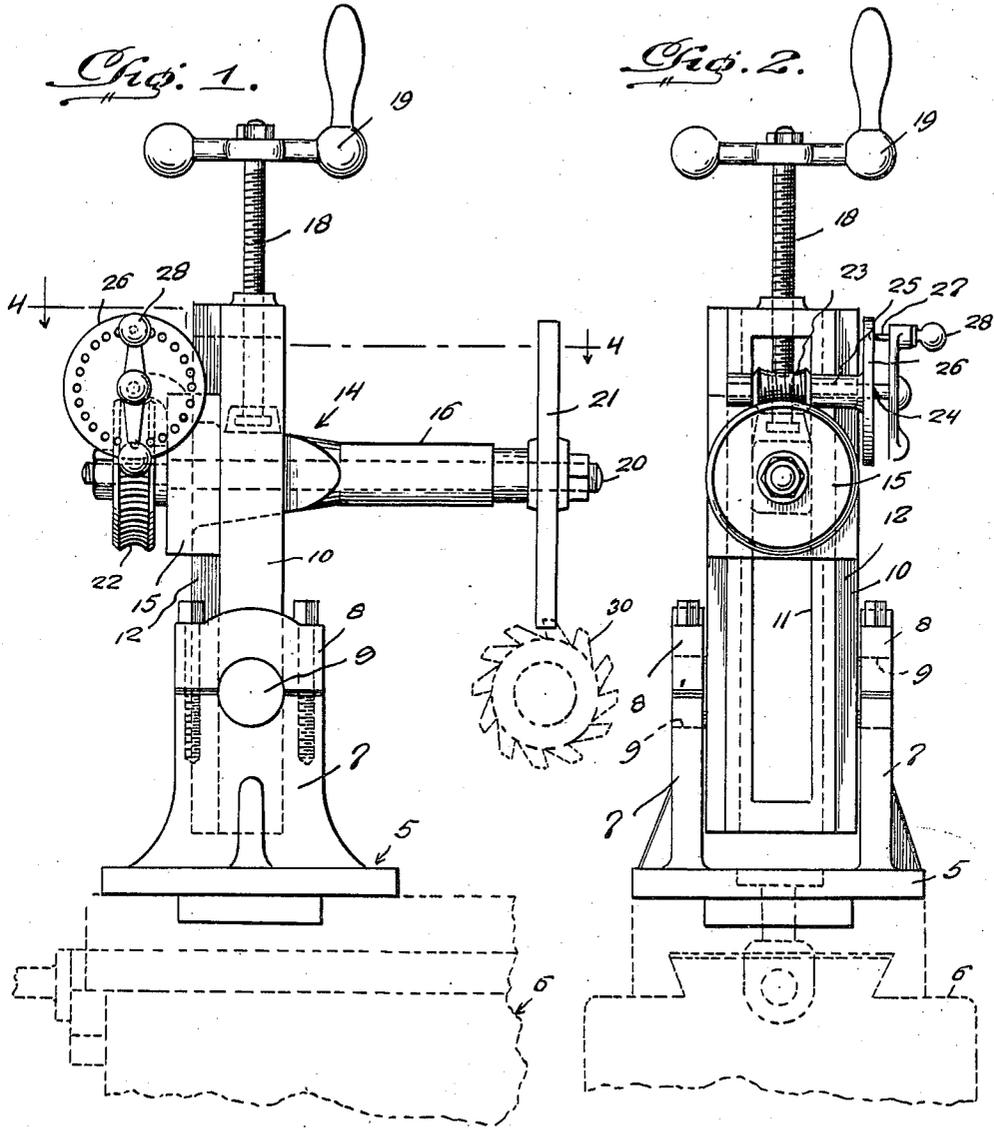
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2,343,508

GEAR CUTTER

Filed June 23, 1942

2 Sheets-Sheet 1



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Fig. 3.

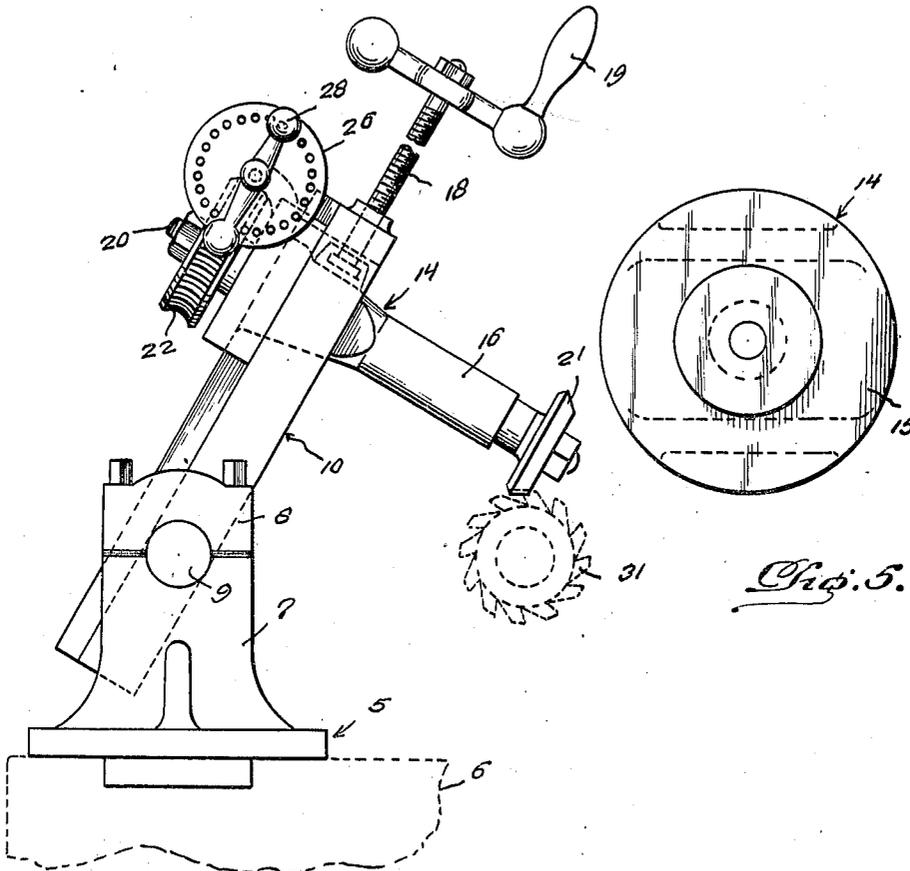


Fig. 5.

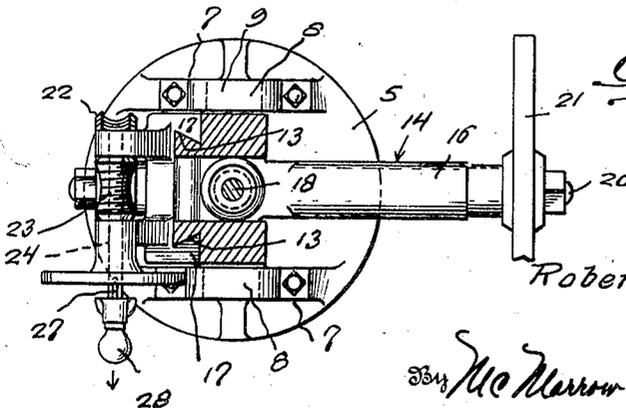


Fig. 4.

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UNITED STATES PATENT OFFICE

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GEAR CUTTER

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1 Claim. (Cl. 90—9)

This invention relates to gear cutters, and has for the primary object the provision of a device of this character which is in the form of an attachment readily adaptable to a lathe or its compound or swivel, so that either bevel or spur type gears may be easily and quickly and accurately cut from gear stock, the construction of the attachment being such that the gear blank or stock will be efficiently supported and may be moved relative to the cutter on the lathe to assure the cutting of the blank or stock as desired.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts as will be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a front elevation illustrating a gear cutting attachment for a lathe constructed in accordance with my invention.

Figure 2 is a side elevation illustrating the attachment.

Figure 3 is a view similar to Figure 1 showing the attachment adjusted into a position for cutting a bevel type gear.

Figure 4 is a sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a face view illustrating a combined adjusting and supporting block and its bearing sleeve.

Referring in detail to the drawings, the numeral 5 indicates the base of the attachment. This base is constructed to permit its easy and quick application to a compound or swivel of a lathe indicated generally by the character 6. Spaced vertically arranged standards 7 are formed on the base, the upper portions of which are in the form of cap bearings 8 to rotatably receive pintles 9 formed on opposite sides of an elongated frame 10, closer to one end of said frame than the other. The frame 10 swings between the standards 7, as shown in Figures 2 and 3 of the drawings, and is provided with an elongated slot 11. Also it is provided with guideways 12 provided with undercut faces 13 to be slidably engaged by a combined supporting plate and journal 14. The combined supporting plate and journal 14 includes a disc-like portion 15 and a bearing sleeve 16.

Formed on the disc-like portion are guide

members 17 slidably engaged with the guideways 12 so that the combined supporting plate and journal 14 may slide freely endwise of the frame.

A feed screw 18 is threaded in one end of the frame and is rotatably connected to the combined supporting plate and journal 14 and is equipped with a suitable handle 19 whereby the feed screw may be rotated in either direction for adjusting the combined plate and journal endwise of the frame in either direction.

A shaft 20 extends through the combined supporting plate and journal 14 and is rotatably supported thereby. A gear blank 21 is detachably secured to one end of the shaft 20 and the other end of the shaft has removably secured thereon a worm gear 22 meshing with a worm 23 secured on a hand-operated adjusting shaft 24. The adjusting shaft 24 is rotatably supported by journals 25 forming a part of the disc-like portion. Secured to the end of one of the journals 25 is an index plate 26 including a series of openings to be engaged by a detent 27 of a hand lever 28 secured on the adjusting shaft 24. The purpose of the index plate and the adjusting shaft 24 is to rotate the gear blank 21 in a step by step movement after each cut has been made therein by the cutter of the lathe.

The cutters of the lathe are indicated diagrammatically and designated by the characters 30 and 31.

The attachment, as shown in Figure 1, is arranged for cutting the blank 21 into a spur type gear. From this illustration it can be readily seen how the blank 21 may be rotated in a step by step movement as each cut is made therein and how the blank may be moved into and out of position of being acted on by the cutter 30. As shown in Figure 3, the attachment is adjusted into a position for the cutting of the blank into a bevel type gear. The frame may be made to sustain the position, as shown in Figure 3, by the tightening of the cap bearings 8. Also, it will be seen how the gear blank can be rotated in a step by step movement and also how it may be moved into and out of position of being acted on by the cutter 31.

An attachment of the kind described in detail and shown in the drawings will be extremely durable, easy to apply and remove from a lathe and will permit gear cutting to be easily, quickly and accurately carried out.

Further, it will be seen that an attachment of this kind may be manufactured and sold at a low cost.

While I have shown and described the pre-

ferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described the invention, what I claim is:

In a gear cutter, an elongated frame having a slot extending endwise thereof and substantially the full length of said frame, trunnions formed on opposite sides of the frame and located closer to one end of the frame than the other end of said frame, guides formed on one face of the frame and arranged at opposite sides of the slot and extending the full length of said frame, a plate having a groove slidably receiving the guides, a journal integral with the plate and extending through the slot, a blank carrying shaft supported by the journal, a worm gear secured to the shaft, spaced bearings on said

5 plate, an operating shaft supported by the bearings, a worm secured to said operating shaft and meshing with the worm gear, an index plate formed on one of said bearings and having the operating shaft extending axially therethrough and including a series of openings arranged annularly of the index plate, a handle secured to the operating shaft and movable over a face of the index plate and including a detent to enter any one of said openings, means for adjusting the first-named plate endwise of the frame, a base mountable on a lathe and including a bifurcated portion receiving the frame for pivotal movement therethrough, and cap type bearings on said bifurcated portion of the frame and frictionally receiving the trunnions whereby the frame may be adjusted to vary the angle of a gear blank on the gear blank shaft relative to a cutter of the lathe.

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