April 12, 1949. M. F. ZUKAS 2,467,070

UNIVERSAL RADII FORMER

Filed Oct. 11, 1945 3 Sheets-Sheet 1

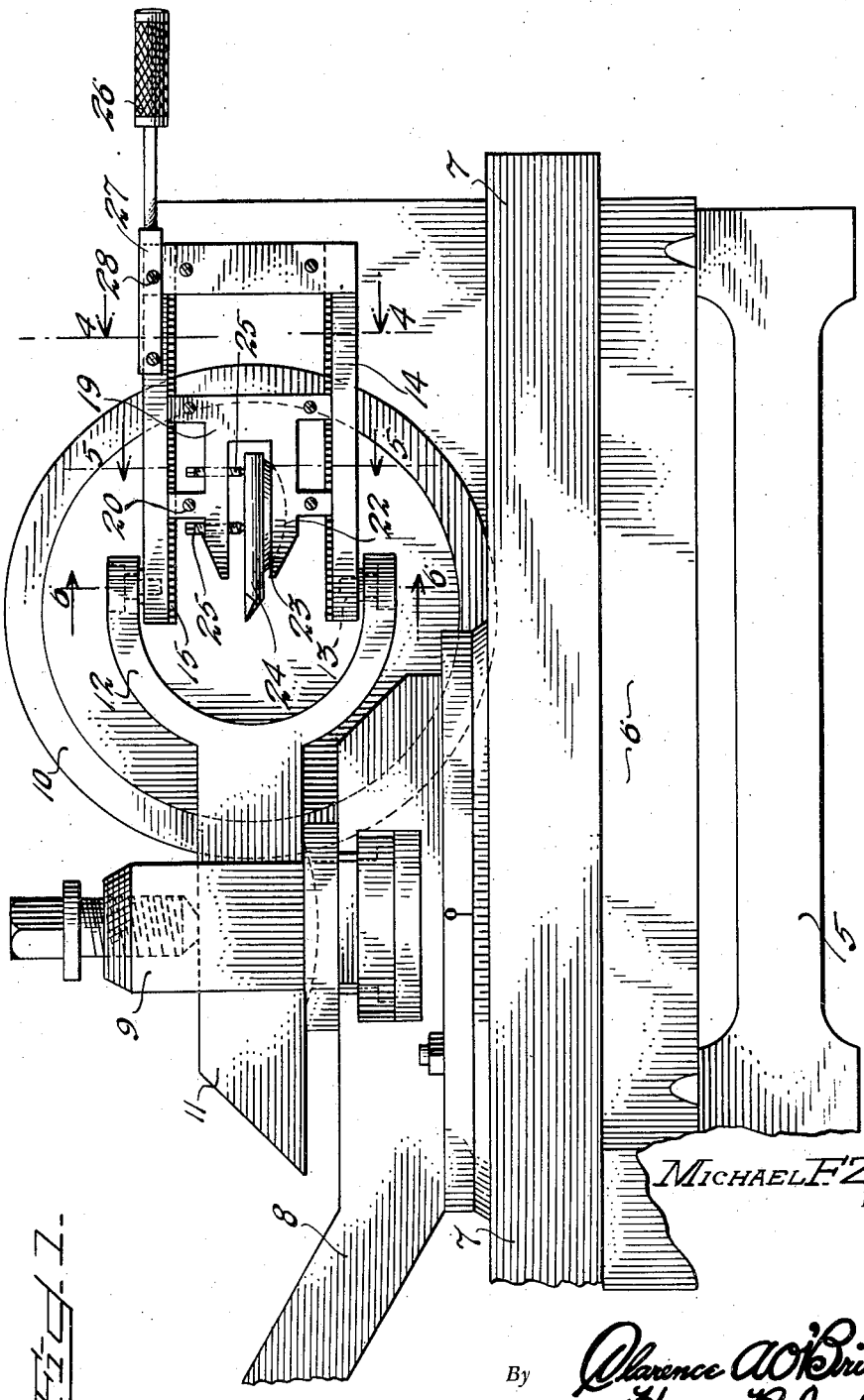


Fig. 1.

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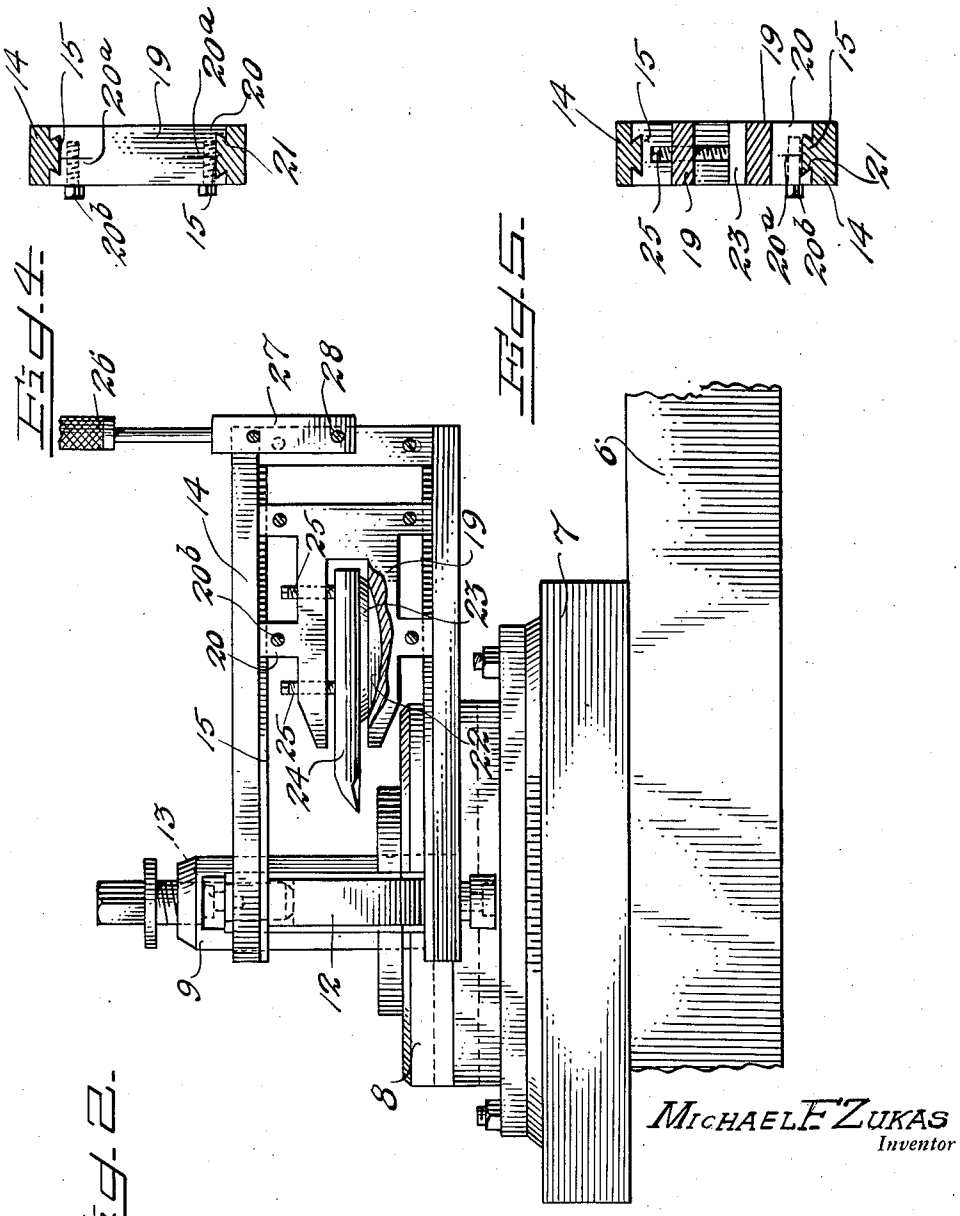


FIG. 2.

FIG. 3.

FIG. 4.

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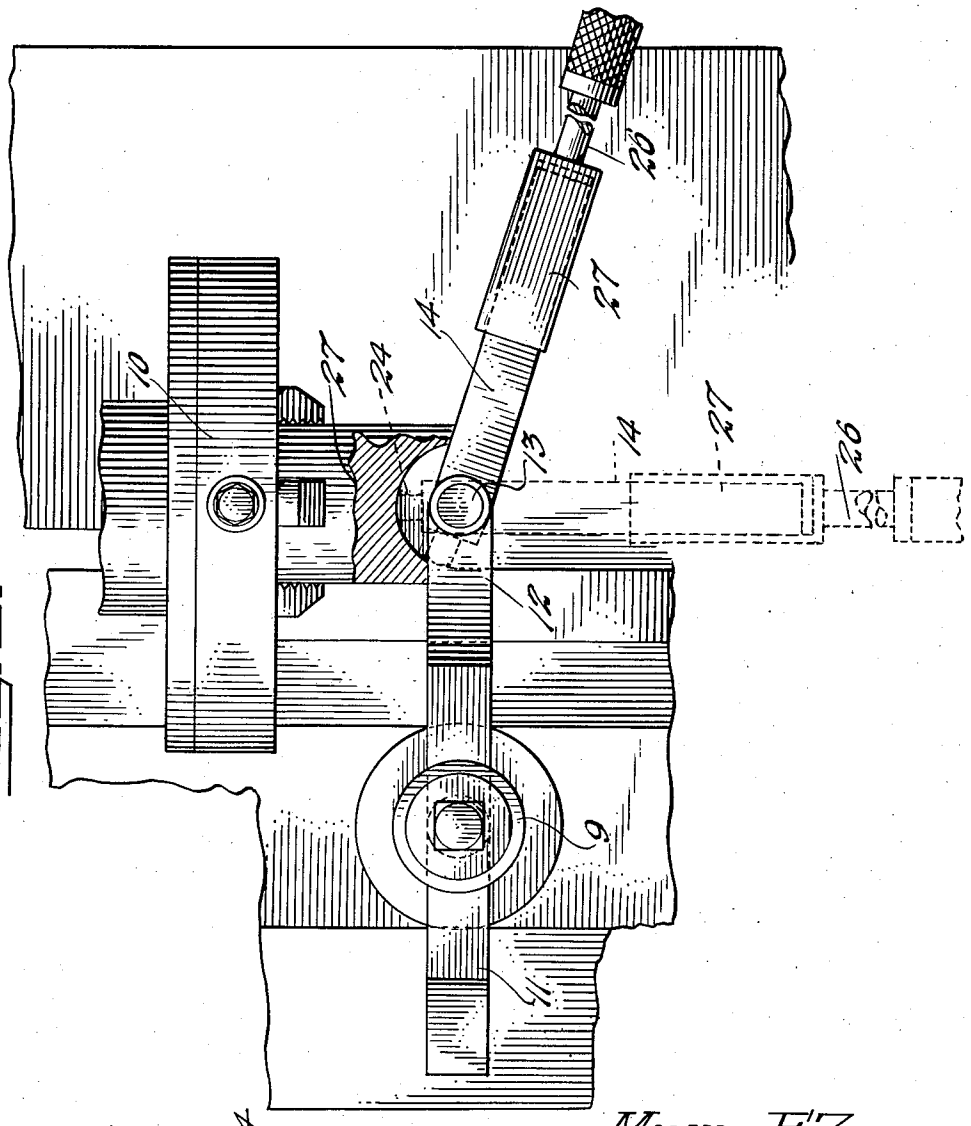


Fig. 2.

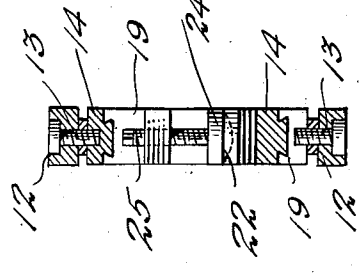


Fig. 6.

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UNITED STATES PATENT OFFICE

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UNIVERSAL RADII FORMER

Michael F. Zukas, Flint, Mich.

Application October 11, 1945, Serial No. 621,723

1 Claim. (Cl. 82—36)

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The present invention relates to a new and useful improvement in attachments for lathes adapted for cutting internal or external radii and the invention has for its primary object to provide a device of this character adaptable to machines where the cutting tool is fixed and the work or stock rotates and arranged to cut internal or external spherical radii of any size, within adjusting limits of the device.

An important object of the present invention is to provide a cutting tool attachment for machines of this character which may be easily and quickly mounted in position on a lathe or similar machinery without necessitating any material changes or alterations in the construction thereof.

A still further object is to provide a device of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is an end elevational view of a lathe showing the attachement in position thereon and with the cutter arranged for cutting internal radii.

Figure 2 is a side elevational view with the cutter arranged for cutting external radii.

Figure 3 is a top plan view with the cutter arranged for cutting internal radii, and

Figures 4, 5 and 6 are sectional views taken respectively on the lines 4—4, 5—5, and 6—6 of Figure 1.

Referring now to the drawings in detail wherein for the purpose of illustration I have disclosed a preferred embodiment of invention, the numeral 5 designates a lathe bed of conventional construction having the longitudinal feed 6 and cross-feed 7 mounted thereon.

The numeral 8 designates the lathe compound on which the tool post 9 is supported. The numeral 10 designates the lathe chuck.

A tool holder includes a shank portion 11 secured in the tool post 9 having a yoke 12 formed at one end, the ends of the yoke having inwardly projecting pivot pins or trunnions 13 mounted therein.

A U-shaped frame 14 has its leg portions horizontally positioned and pivotally mounted on the

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pins 13, the opposed edges of the frame having longitudinally extending dovetailed ribs or tongues 15 formed thereon.

A bit holding frame 19 of generally U-shaped construction is also positioned horizontally in the frame 14 and is formed at its upper and lower edges with longitudinally spaced lateral extensions 20 having dovetail grooves 21 formed in the outer ends thereof slidably mounted on the tongues 15.

The ends of the extensions 20 are split as indicated at 20a and are drawn together in friction clamping engagement with the tongues 15 by set screws 20b.

In the opposed edge of one of the legs of the frame 19 is a key-way 22 receiving a key 23 for securing a tool bit 24 therein, the tool bit being secured in engagement with the key by means of set screws 25 threaded through the opposite leg portions of the frame 19 as will be apparent from an inspection of Figure 1 of the drawings.

A handle 26 is formed at its inner end with a channel-shaped shank 27 adapted for receiving an edge of the frame 14 and secured in either a horizontal position as shown in Fig. 1 or in a vertical position as shown in Fig. 2 by set screws 28.

In the operation of the device and when the tool bit 24 is desired for cutting internal radii as indicated in Figures 1 and 3 of the drawings in the end of the work such as a rod or shaft 27 held by the chuck 10 of the lathe, the handle 26 is secured in its horizontal position to the frame 14 and the bit holding frame 19 is adjusted manually inwardly so that the cutting end of the bit 24 will be disposed inwardly of the pivot pins 13. The device is manually operated by slowly and firmly swinging the handle 26 either clockwise or counter-clockwise as the case may be on the cutting stroke into and out of the dotted line positions as shown in Figure 3 of the drawings whereby an internal radii will be cut in the end of the work.

When it is desired to cut external radii such as a spherical object on the end of the work, the handle 26 is positioned vertically and the frame 19 moved outwardly with the cutter 24 beyond the pivots 13, the cutter being inverted with its cutting side down, as shown in Figure 2. The handle 26 is then swung counter-clockwise so as not to interfere with the compound rest of the lathe.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the con-

struction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

I claim:

An attachment for lathes of a type including a tool post and a chuck, said attachment comprising a horizontal yoke mounted in said post, a horizontal U-shaped frame pivoted at its ends to said yoke with the legs of the frame spaced vertically one above the other, a bit holding frame, a tongue and groove slidable connection between the legs of the U-shaped frame and the bit holding frame, said groove having yieldable sides, means for adjusting the sides of the groove into and out of friction gripping engagement with the tongue, and means for securing a tool bit in said holding frame, said first named frame being adapted for swinging the bit held in said bit holding frame across the end of work held by said chuck.

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