

July 14, 1953

O. VON ZELEWSKY
SUPPORT OF COPYING LATHES

2,645,148

Filed April 18, 1950

2 Sheets-Sheet 1

Fig. 1

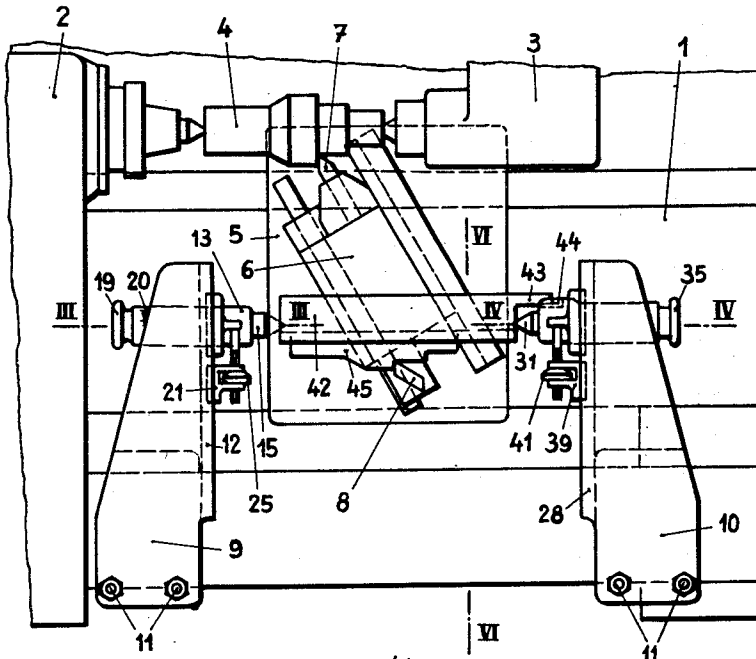


Fig 8

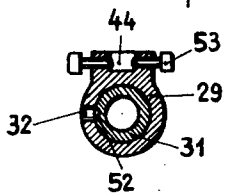
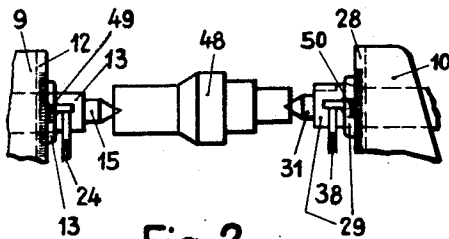


Fig. 2



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Fig. 3

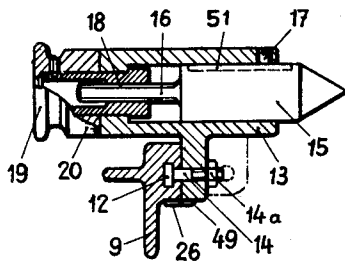


Fig. 4

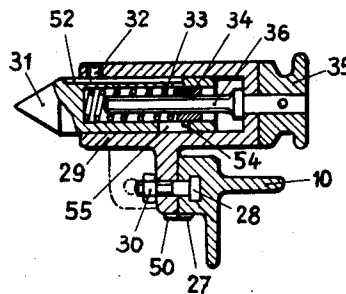


Fig. 5

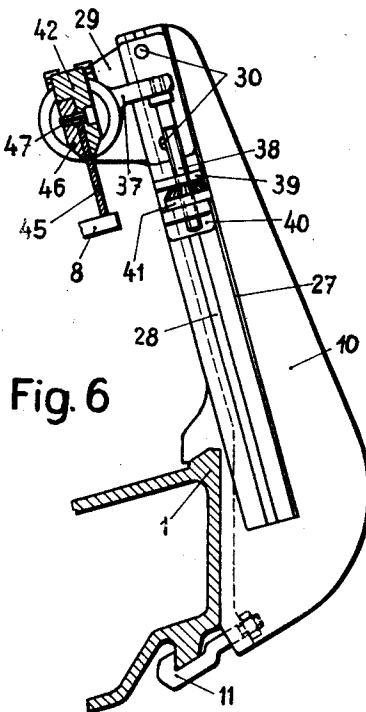
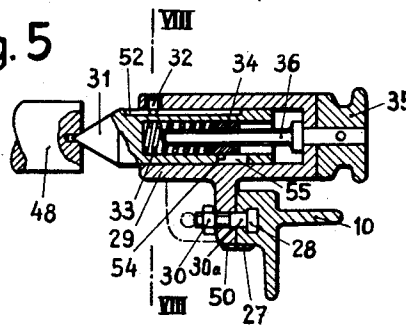
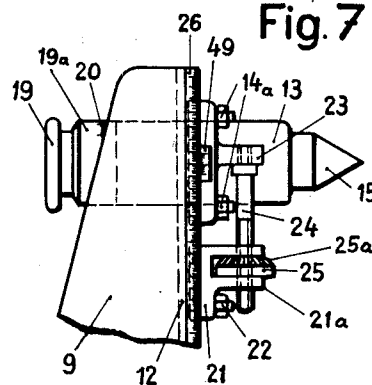


Fig. 6

Fig. 7



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SUPPORT OF COPYING LATHES

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4 Claims. (Cl. 82—14)

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This invention relates to machine tools and refers more particularly to means adjusting and setting the supports of templates and prototypes of copying lathes which are provided with two template supports adjustably mounted in the machine frame and carrying pins or holders which engage the template or prototype.

An object of the present invention is to provide an adjusting or setting device for template holders through the use of which the position of the templates can be easily and quickly adjusted.

Other objects of the present invention will become apparent in the course of the following specification.

The objects of the present invention may be realized through the provision of an adjusting or setting device, the template holders of which can be finely adjusted axially as well as in the direction of the tool.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing, by way of example, a preferred embodiment of the inventive idea.

In the drawings:

Figure 1 is a diagrammatic front view of a lathe provided with template supports;

Figure 2 shows holders supporting a round template;

Figure 3 is a longitudinal section along the line III—III of Figure 1;

Figure 4 is a longitudinal section along the line IV—IV of Figure 1, and illustrates the spring engaging the holder in a position of preliminary tension;

Figure 5 is similar to Figure 4, and shows a holder in the position in which it engages a template;

Figure 6 is a section along the line VI—VI of Fig. 1 on a somewhat enlarged scale;

Figure 7 is a fragmentary side view illustrating the fine adjustment of the template holder in the direction of the tool;

Figure 8 is a section along the line VIII—VIII of Figure 5.

The copying lathe shown diagrammatically in Figure 1 of the drawings includes a frame 1, a headstock 2 and a tailstock 3 with a work piece 4 held between the headstock 2 and the tailstock 3.

Obviously any suitable means may be used for supporting the work piece 4.

A carriage 5 is movable in a direction parallel to the central axis of the work piece 4 by any

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suitable means, not shown in the drawing. A tool carrier 6 is mounted upon the carriage 5 and is movable thereon at an angle to the longitudinal direction of movement of the carriage. The holder 6 carries a tool 7. A follower 8 is carried by the member 6 and is connected with the tool 7 by an electrical or hydraulic copying device which is not illustrated in the drawings, and is located within the casing 6. The follower 8 follows the outlines of a flat template 45 or a round prototype 48, and these movements of the template are transmitted by said copying device to the tool 7 which reproduces the outlines of the template or prototype upon the work piece 4.

The template 45 or the prototype 48 is carried by two supports or uprights, namely, the left-hand upright 9 and the right-hand upright 10 (looking in the direction of Figure 1).

The uprights 9 and 10 may be moved longitudinally upon the lower portion of the frame 1, and may be held thereon by bolts 11.

As illustrated in Figures 3 and 7, the upright 9 carries a vertical scale 26 and is provided with a vertical groove 12 which is T-shaped in cross-section. A casing 13 for the template holder 15 carries bolts 14 which can slide in the T-shaped groove 12 and which carry nuts 14a to clamp in place the casing 13.

The device is also provided with a vernier 49 shown in Figure 7.

The template holder 15 is firmly connected with a threaded rod 16 shown in Figure 3 and extending within the casing 13. A nut 18 is mounted upon the threaded rod 16 and is connected with a hand wheel 19 located outside of the casing 13. A guide screw 17 is carried upon the front end of the casing 13 and projects into a longitudinal groove 51 provided in the holder 15 so as to prevent the holder from turning.

As shown in Figure 7 the hand wheel 19 is integral with a sleeve 19a carrying a scale 20 upon the outer surface thereof.

A block 21 also projects within the groove 12 and may be held firmly upon the upright 9 by means of a bolt 22.

The casing 13 is integral with a ring or projection 23 which carries a threaded spindle 24. A nut 25 is mounted upon the spindle 24 and is provided with scale lines 25a. Projections 21a, which are integral with the member 21, are used to hold the nut 25 in place.

The upright 10 and the parts connected therewith are illustrated in detail in Figures 4, 5, 6 and 8. The upright 10 is provided with

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a scale 27 indicated in Figure 6. Furthermore, the upright 10 carries a T-shaped groove 28 which contains bolts 30a carried by a casing 29 so that the casing 29 can slide in the groove 28. Nuts 30 are carried by the bolts 30a and are used to hold in place the casing 29. As shown in Figure 2, the device is provided with a vernier 50.

The casing 29 carries a template holder 31 which is provided with a longitudinal groove 52. A screw 32 is carried by the casing 29 and projects into the groove 52 to prevent the turning of the holder 31. It is apparent, however, that the two holders 15 and 31 are movable axially within their casings.

A portion of the holder 31 is hollow and contains a nut 34 which is movable longitudinally upon a threaded rod 36. The nut 34 carries a projection or pin 54 which extends into a longitudinal groove 55 formed in the holder 31. The projection 54 limits the movements of the nut 34.

A coiled spring 33 is located within the holder 31 and presses within one end against the bottom of the holder. The other end of the spring 33 engages the nut 34. The threaded rod 36 is firmly connected with a hand wheel 35 which is located outside of the casing 29.

The upright 10 is firmly connected with an ear or projection 37 carrying a threaded spindle 38. A support 40 projects into the T-shaped groove 28 and may be firmly attached to the upright 10 by suitable bolts not shown in the drawings. The support 40 carries projections 39 which hold in place a nut 41 mounted upon the threaded spindle 38 and provided with a scale for adjusting purposes.

The casing 29 is provided with a longitudinal groove 44 (Fig. 1) which is used for receiving an end 43 of the template-carrier 42. Then, the nuts 53 (Fig. 8) which are carried by the casing 29 can be set to engage the projection 43 and to prevent the turning of the template carrier 42. The device may be so set that the surface of the template 45 which is to be engaged by the follower 8 will be exactly parallel to the follower (Fig. 6).

As shown in Figures 1 and 6, the template 45 is firmly held upon the carrier 42 by means of a clamping plate 46 which presses the template 45 against a surface of the carrier 42 and which is held in place by a number of screws 47.

It is apparent that the flat template 45 may be replaced by a round prototype 48, which is shown in Figure 2, and which is held in place by projections 15 and 31 engaging the prototype along its axis of rotation.

The device is operated as follows:

Let it be assumed that a work piece 4 (Fig. 1) is to be produced upon the copying lathe in conformity with a flat template 45 or a prototype 48 (Fig. 2).

A blank constituting the work piece to be produced is inserted between the headstock 2 and the tailstock 3 and is firmly held thereon, as shown in Figure 1. Thereupon the longitudinal carriage 5 and the transverse carriage 6 are shifted by hand or by any other suitable means until the tool 7 is brought into engagement with the right-hand end of the work piece 4 (looking in the direction of Figure 1).

Thereupon, the two uprights 9 and 10 are shifted into suitable positions upon the frame 1 of the lathe and are attached to the frame by bolts 11.

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If the flat template 45 is used, the template holder 42 is inserted between the points of the projecting members 15 and 31, whereupon the template 45 is mounted upon the carrier 42 and is clamped thereon by the clamping plate 46 and the bolt 47.

In the event it is desired to use the cylindrical prototype 48 the latter is set between the two uprights 9 and 10 upon the members 15 and 31, care being taken that the points of the members 15 and 31 engage the axis of rotation of the prototype 48.

When the approximate axial or longitudinal position of the template 45 or of the prototype 48 has been determined in the above-described manner its approximate vertical position, measured in the direction toward the work piece 4 and in relation to the follower 8, must be determined in the following manner:

The operator loosens the nuts 14a of the casing 13 as well as the nuts 22 of the support 21. The casing 13 which is connected with the support 21 is shifted manually upon the groove 12 until it has assumed a position which may be accepted as approximately correct. Thereupon, the nut 22 is screwed on firmly while the nuts 14a are turned lightly. The operator then turns the set screw 25 which shifts the rod 24 mounted thereon and connected with the casing 13 in relation to the support 21. The fine position of the casing 13 is determined by means of the vernier 49 and the scale 26. Thereupon, the nuts 14a are screwed on tightly.

It is apparent that a similar procedure is repeated at the other upright 10 and the parts carried thereby.

Should it be determined during the turning of the first work piece that further corrections are necessary, then such corrections can be made by loosening the nuts 14a and turning the member 25 until the desired position is attained. Thereupon, the nuts 14a are screwed on tightly.

The fine axial adjustment of the template or the prototype is attained by turning the wheel 19 carried upon the upright 9 (Fig. 7). The holder 31 carried by the upright 10 is resiliently mounted, as indicated in Figures 4 and 5.

Should the operator desire to shift the template or prototype to the left (looking in the direction of Figure 1) then the wheel 19 is turned counter-clockwise to an amount which can be read upon the scale 20 (Fig. 7). Then the user turns the wheel 35, located opposite the wheel 19, clockwise until the projection 54 strikes against the left-hand end wall of the groove 55 (looking in the direction of Figure 5).

Should the operator desire to shift the template or prototype to the right (looking in the direction of Figure 1) then he turns the wheel 35 counter-clockwise for a few rotations. The holder 31 remains, however, under the action of the spring 33. Then, the operator turns clockwise the wheel 19 until a desired adjustment is attained by an examination of the scale 20.

Finally, the wheel 35 is again turned clockwise until the pin 54 strikes the left end of the groove 55 (looking in the direction of Figure 5).

It is apparent that the described resilient support in one of the two template holders makes it possible to set and to horizontally adjust a very long template in a simple and most effective manner, and without employing more than a single operator.

It is further apparent that the example illustrated above has been given solely by way of illus-

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tration and not by way of limitation, and that it is subject to various modifications and variations without departing from the scope or intent of the present invention. All such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. In machine tools, having an upright, a holder upon said upright and having a template-engaging tip, a sleeve enclosing said holder and carried by said upright, the holder being shiftable within said sleeve, a threaded rod firmly connected with the holder and extending within said sleeve, a nut mounted upon said rod, a wheel firmly connected with said nut and located outside of said sleeve, a scale upon said sleeve adjacent said wheel for the fine axial adjustment of the holder, and means connected with said sleeve for the fine transverse adjustment of the holder.

2. In machine tools having an upright, a holder upon said upright and having a template-engaging tip, means carried by said upright and connected with the holder for the fine transverse adjustment of the holder, resilient means supporting said holder in the direction of its axis, and means connected with said holder for immovably holding said holder upon completion of the transverse adjustment movement.

3. In machine tools having an upright, a holder upon said upright and having a template-engaging tip, a sleeve enclosing said holder and carried by said upright, the holder being shiftable within said sleeve and being partly hollow, a wheel lo-

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cated outside of said sleeve, a threaded rod firmly connected with said wheel and extending within said sleeve and the holder, a nut mounted upon said rod and having a projection extending into an axial recess formed in the holder, said projection being movable within said recess, a spring between the bottom of the holder and said nut, and means connected with said sleeve for the fine transverse adjustment of the last-mentioned holder.

4. In machine tools having an upright, a holder upon said upright and having a template-engaging tip, means carried by said upright and connected with the holder for the fine axial adjustment of the holder, and a set screw connected with the last-mentioned means for the fine transverse adjustment of the holder, whereby the template surface to be copied may be set parallel to a copying device.

OTTOMAR VON ZELEWSKY.

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