

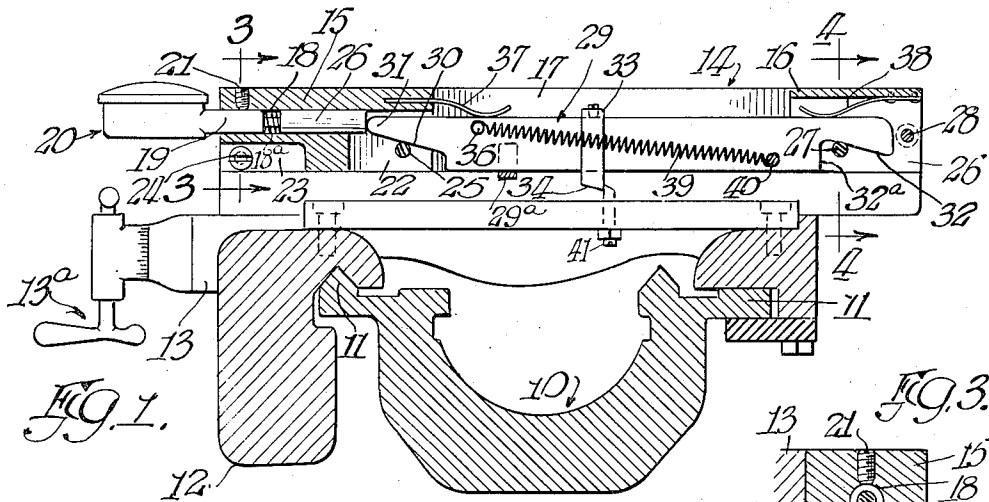
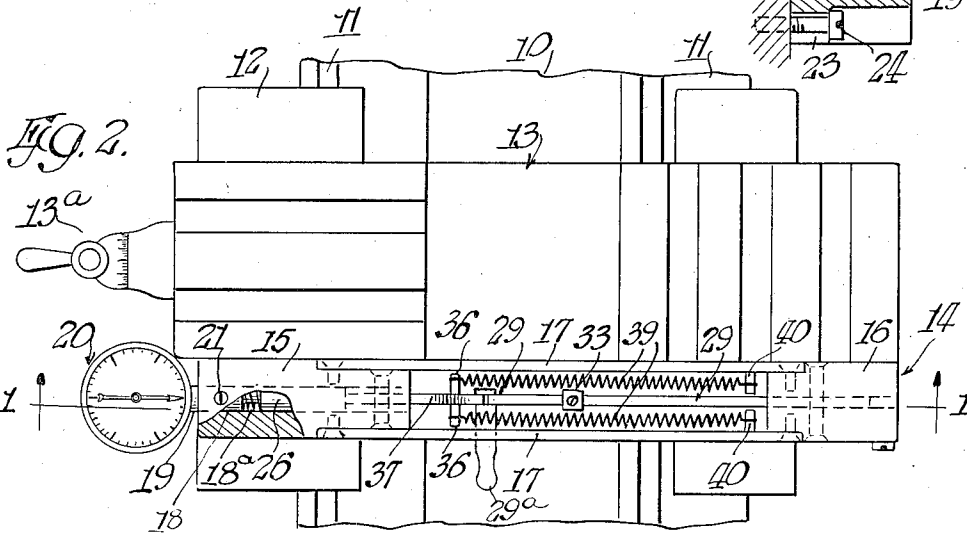
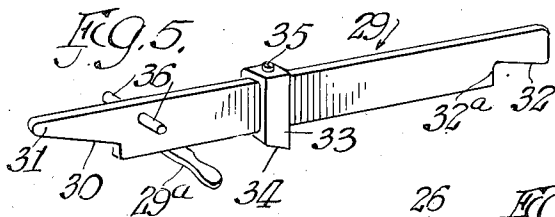
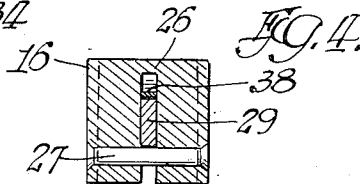
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INDICATOR ATTACHMENT FOR MACHINE TOOLS

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INDICATOR ATTACHMENT FOR MACHINE TOOLS

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5 Claims. (Cl. 33—125)

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This invention relates to improvements in indicator attachments for machine tools and it consists of the matters hereinafter described and more particularly pointed out in the appended claims. The improved attachment is applicable to machine tools such as lathes, mills and the like that include a carriage having a cross slide thereon.

One of the objects of the invention is to provide means that may be readily attached in an out of the way but convenient location to the cross slide of a machine tool visibly and accurately to indicate the exact position of the slide on the carriage for a more precise operation of the tool.

Another object of the invention is to provide an attachment of this kind which is of a simple construction that cannot readily get out of order and which will give trouble free service over a long period of time.

Also, it is an object of the invention to provide an attachment which is devoid of gearing or threaded and other parts subject to wear, and which would induce inaccuracy in operation.

Furthermore, it is an object of the invention to provide an attachment of this kind which is constructed to safely protect against damage by jamming the indicating mechanism used therewith.

The above mentioned objects of the invention, along with the advantages thereof will more fully appear as the specification proceeds.

In the drawing:

Fig. 1 is a transverse vertical sectional view through the bed of a machine tool with a carriage and cross slide thereon and with the improved attachment in position on said slide and appearing in longitudinal section as taken on the line I—I of Fig. 2.

Fig. 2 is a top plan view of the parts appearing in Fig. 1.

Figs. 3 and 4 are transverse vertical detail sectional views through parts of the improved attachment as taken on the lines 3—3 and 4—4 respectively and on a scale enlarged over that of Fig. 1.

Fig. 5 is a perspective view of a certain actuator bar forming a part of the improved attachment and which will be more fully referred to later.

Referring now in detail to the parts shown in the drawings: 10 indicates as a whole the bed of a lathe or similar machine tool, which bed is provided with the usual laterally spaced rails 11—11, upon which a carriage 12 is mounted for

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movement longitudinally of the bed. A cross slide 13 is arranged on the carriage for movement transversely of the bed, by means of a feed screw 13a. The parts just mentioned are conventional in several kinds of machine tools and require no further description.

The improved attachment, which is indicated as a whole at 14, is in the form of a rectangular casing or support which is herein shown to be substantially as long as the cross slide 13 and is intended for application to one side thereof, as best appears in Fig. 2. Said casing includes spaced front and rear rectangular end blocks 15 and 16 respectively that are connected together by vertically edgewise disposed side bars 17—17 end portions of which engage in seats in the side faces of said blocks and are secured thereto by screws, dowels or the like that appear in dotted lines in Fig. 2. With the arrangement described, the casing is open at the top and bottom between said end blocks.

The front end block is provided with a longitudinal bore 18 and the tubular extension 19 of a conventional indicating mechanism 20 is engaged in the front end of said bore and is locked in position thereon by a set screw 21. The rear end of said bore opens into a relatively narrow groove or channel 22 in the bottom of the rear end of the front block. A part of the side of the front end of the block below the bore 18 therein is removed to provide a flange 23 through which a screw 24 is adapted to pass to fasten the front end block to the associated side of the cross slide. A transverse pin 25 is provided in the rear end of the block so as to cross the groove 22 therein. The bore 18 in the block 15, rearwardly of the extension 19 of the indicating mechanism 20 has slidably engaged therein an operating plunger or member 26. The front end of said member 26 is engaged with a reciprocable pin projecting from the tubular extension 19 while its rear end overhangs a part of the groove or channel 22. A spring 18a is disposed in the bore 18 between the extension 19 and plunger 26 to return the latter to its normal position after it has actuated the mechanism 20.

The rear end block 16 is provided with a longitudinal groove or channel 26 that opens through the bottom thereof and is provided with a transverse pin 27 that crosses said channel. A screw 28 is provided to attach said block to the cross slide 13.

29 indicates the actuating bar of the attachment and which best appears in perspective in Fig. 5. The ends of said bar are disposed with

a fairly snug fit in the channels 22 and 26 of the end blocks 15 and 16. The front end of said bar is provided with a downwardly facing, longitudinally extending inclined surface 30, which terminates in a rounded front end nose 31 for engagement with the rear end of the plunger 26. The rear end of the bar is also provided with a downwardly facing longitudinally extending inclined surface 32 that is parallel with the other inclined surface 30. The front end of the surface 32 terminates in a shoulder 32a. Associated with said bar and longitudinally adjustable on the bar is one or more abutment members 33, which has an upwardly and forwardly inclined bottom surface 34. This abutment member carries a set screw 35 at its top whereby said member may be locked in any adjusted position along the bar. At a point between the nose 31 and abutment 33, toward the top edge of the bar, there is provided outwardly extending pins 36 and shortly to the rear of said pins and projecting laterally from the bottom edge of said bar is a trigger 29a. This trigger extends outwardly beyond one of the bars 17—17 so as to be engaged by the machine operator's fingers for actuation.

When the bar 29 is in operative position in the end blocks, the inclined surfaces 30 and 32 thereof engage upon the cross pins 25 and 27 as best appears in Fig. 1. After an operation of the attachment, the shoulder 32a is engaged with said pin 27. The upper central portion of the blocks 15 and 16 carry spring like fingers 37 and 38 which bear against the top edge of the bar 29 and yieldingly urge the bar downwardly, holding the same in engagement with the pins 25—27.

The pins 36 have attached thereto one end of a pair of contractile springs 39—39 and the other end of said springs are attached to pins 40—40 extending inwardly from the bars 17 near the block 16, as appears in Fig. 2. With the arrangement described, it is obvious that the springs 37—38 yieldingly hold the bar down in operative position upon the cross pins and that the springs 39—39 normally draw or urge the bar 29 rearwardly.

On a part of the carriage 12 in line with and beneath the bar 29 is one or more stop members 41 adapted to be normally engaged by the associated abutment 33 under the action of the springs 39—39 (see Figs. 1 and 2).

Assume that the attachment has been applied to one side of a cross slide by the screws 24 and 28 and that the stop pin 41 has been applied to the carriage 12. Further, assume that the feed screw 13a is being operated to feed the slide 13 rearwardly across said carriage. In this movement of the slide (with the abutment 33 engaged against the stop 41), the slide moves relatively to the bar 29 which causes the plunger 26 to actuate the mechanism 20 through the medium of the pin, before mentioned, which projects from the tubular extension 19. At the same time the bar 29 moves perpendicularly to its length by reason of the inclined surface riding upon the cross pins 25 and 27 respectively. In this movement of said parts, the springs 37—38 are compressed and the springs 39—39 are expanded. Substantially instantly with the actuation of the mechanism 20, the abutment 33 passes the top end of the stop 41 and the springs 37—38 and 39 respectively then move the bar 29 downwardly and rearwardly to bring the shoulder 32a into engagement against the pin 27.

In the return movement of the slide 13 across the carriage 12, the inclined surface 34 of the abutment 33 rides the associated top end surface of the stop 41 and passes thereover so that the bar 29 is again in its normal position and wherein the abutment 33 is engaged with the stop 41 as in Fig. 1. The plunger 26 follows the bar 29 in this return movement and the pin that projects from the tubular extension 19 follows and maintains contact with the front end of the plunger 26.

The improved attachment is simple and inexpensive in construction and is efficient in operation for its intended purpose and may be readily applied to the cross slide of most any machine tool, for its intended purpose.

With the parts arranged as described, the indicator mechanism 20 cannot be damaged by jamming because the bar 29 will yield in its operation before it can build up a pressure sufficient to damage said mechanism.

The angularity of the inclined surfaces 30 and 32 respectively of the bar 29 and the depth of the adjoining surfaces of the abutment 33 and stop 41 is selected to suit the size range of the indicating mechanism 20. The inclination or slope of said surfaces is figured or developed to move the bar 29 a distance slightly less than the total range of a selected or given mechanism and will then disengage the abutment and stop 33 and 41 respectively. If the bar 29 is not lifted during movement of the slide in either direction, the "riding" over of a stop will result merely in a slight "kick" and a clicking sound will be heard but the mechanism 20 will in no manner be damaged.

By means of the trigger 29a, the operator may pull the bar 29 forwardly for quick adjustment to dispose the abutment in the position shown in Fig. 1 after only a short momentary operation of the feed screw 13a to move the slide forwardly. Thus in many instances long operations of said feed screw may be avoided. With the attachment, it is possible to indicate the exact position of the cross slide for precision machine tool operations.

While in describing the invention, I have referred in detail to the form, arrangement and construction of the parts involved, the same is to be considered only in the illustrative sense so that I do not wish to be limited thereto except as may be specifically set forth in the appended claims.

I claim as my invention:

1. An attachment for the slide of a machine tool and embodying therein a supporting means including longitudinally spaced block-like end pieces operatively secured together and each having a downwardly opening longitudinal groove therein, one of said end pieces being adapted to have an indicating mechanism carried thereby, an operating member for said mechanism slidably mounted in said one of said end pieces, a bar having end portions disposed in said grooves in said end pieces and formed with inclined longitudinal surfaces, a pin carried by each end piece and crossing the groove therein and upon which said inclined surfaces of the bar engage, resilient means between said end pieces and said bar respectively for yieldingly holding the inclined surfaces in engagement with said pins, said bar in its normal position having one end thereof engaged with said operating member, resilient means for urging said bar in one direction, and means providing an abutment on said bar

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and adapted for engagement with a fixed stop on a part of said machine tool upon which said slide, to which said supporting means is attached, is operatively engaged for movement.

2. An attachment for the slide of a machine tool embodying therein, supporting means adapted for application to one side of said slide and formed at one end to receive and support an indicating mechanism, an operating member for said mechanism mounted for guided movement in said one end of said supporting means, a bar arranged for guided longitudinal movement on said supporting means and formed with longitudinally spaced inclined surfaces, means carried by said supporting means upon which the inclined surfaces of said bar engage, means carried by said supporting means and acting on said bar to yieldingly hold the inclined surfaces thereof in engagement with said means carried by said supporting means, said bar normally having one end thereof engaged with said operating member, means for urging said bar in one direction, and means providing an abutment on said bar adapted for engagement with a part on the machine tool upon which said slide is engaged.

3. An attachment for the slide of a machine tool embodying therein, supporting means adapted for application to one side of said slide and formed at one end to receive and support an indicating mechanism, an operating member for said mechanism mounted for guided movement in said one end of said supporting means, a bar arranged for guided longitudinal movement on said supporting means and formed with longitudinally spaced inclined surfaces, means carried by said supporting means upon which the inclined surfaces of said bar engage, means carried by said supporting means and acting on said bar to yieldingly hold the inclined surfaces thereof in engagement with said means carried by said supporting means, said bar normally having one end thereof engaged with said operating member, means for urging said bar in one direction, means providing an abutment on said bar, means extending parallel with said bar and adapted to be secured to a part of the machine tool upon which said slide is engaged, means providing an abutment on said last mentioned means adapted for engagement by said first mentioned abutment in the movement of said slide, said abutments being relatively adjustable in the direction of the length of said bar.

4. An attachment for the slide of a machine tool embodying therein supporting means having laterally spaced sides and end parts connecting said sides together, each end part having a

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downwardly opening longitudinal groove therein, one of said end parts being adapted to receive and support an indicating mechanism, an operating member for said mechanism mounted for longitudinal movement in said one of said end parts, a bar disposed between said sides and having end portions arranged in said grooves and formed with longitudinally spaced inclined surfaces, members extending across said grooves in said end parts and upon which said inclined surfaces engage, means operating upon said bar to yieldingly hold the inclined surfaces thereof in engagement with said last mentioned members, said bar normally having one end thereof engaged with said operating member, means for urging said bar in one direction, and means providing an abutment on said bar adapted for engagement with a part on the machine tool upon which the slide is engaged.

5. In combination with a machine tool that includes a carriage and a movable slide thereon, supporting means carried by said slide, mechanism carried by said supporting means for indicating the amount of movement of said slide, a bar arranged for guided longitudinal movement on said supporting means and formed with longitudinally spaced inclined surfaces, means carried by said supporting means upon which the inclined surfaces of said bar engage, means carried by the supporting means and acting on said bar to yieldingly hold the inclined surfaces thereof in engagement with said means carried by said supporting means, said bar normally having one end thereof engaged with said operating member, means for urging said bar in one direction, an abutment on said bar, a member carried by said carriage and extending longitudinally with respect to said bar, a second abutment mounted on said member and adapted for engagement by the first mentioned abutment in the movement of the slide in one direction on the carriage to cause a movement of said bar relative to said supporting means to actuate said mechanism through said operating member, said abutments being relatively adjustable in the direction of the length of said bar.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,323,267	Hanson	Dec. 2, 1919