

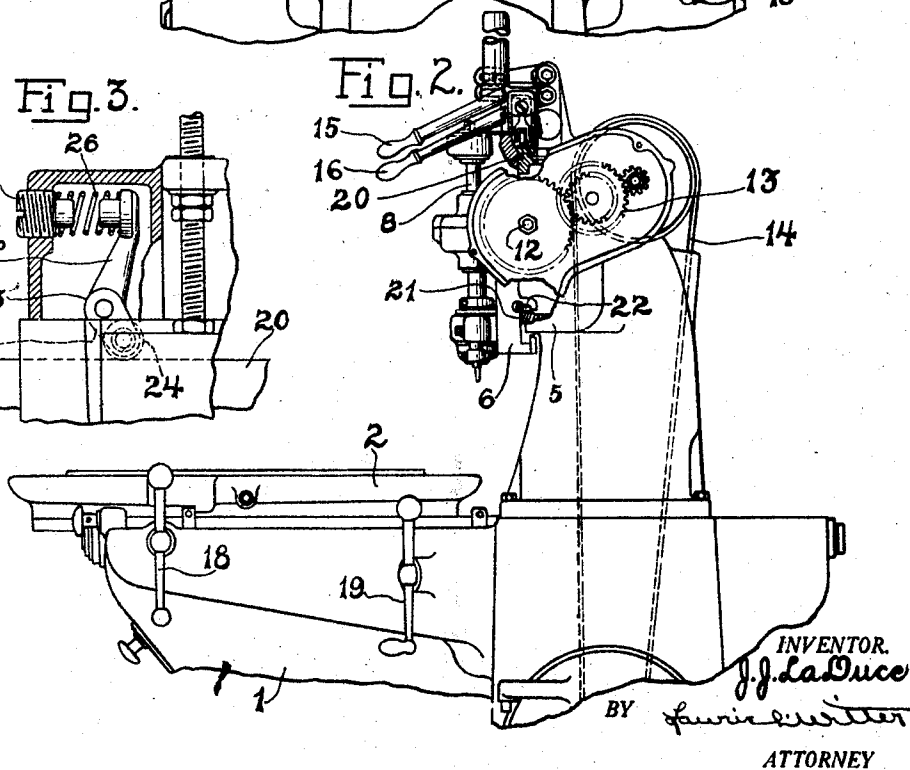
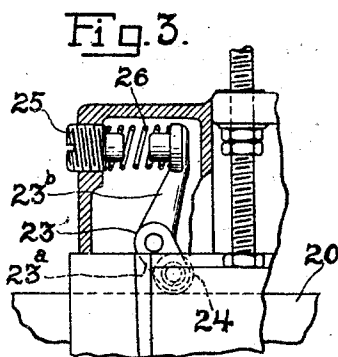
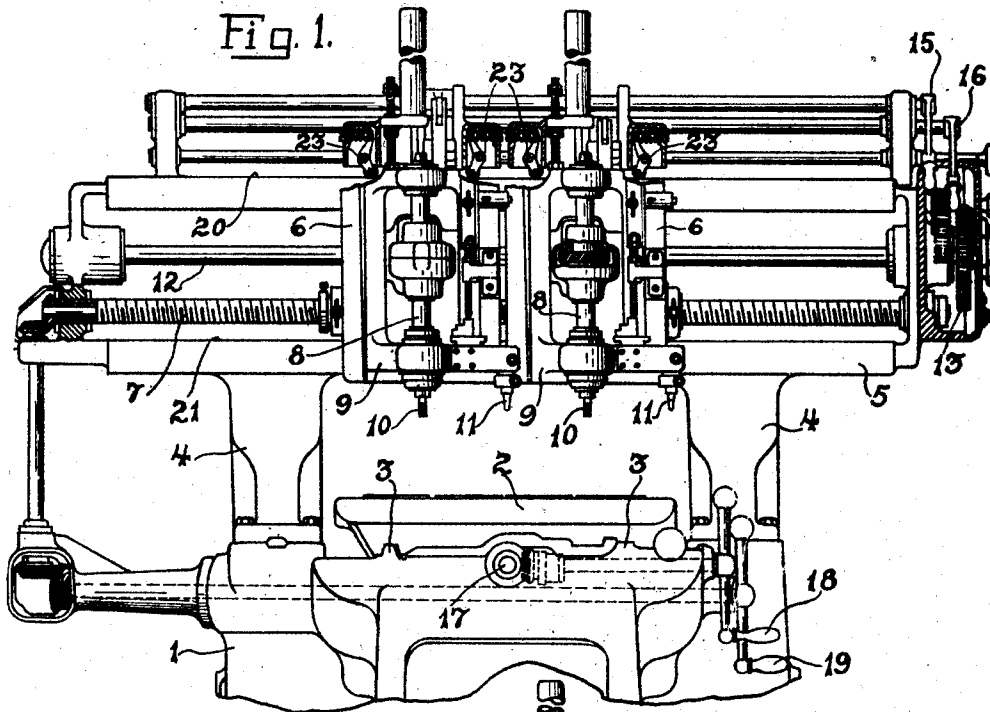
**Oct. 13, 1925.**

**1,556,852**

**J. J. LA DUCER**

# PROFILING MACHINE

Filed June 9, 1923



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# UNITED STATES PATENT OFFICE.

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## PROFILING MACHINE.

Application filed June 9, 1923. Serial No. 644,387.

*To all whom it may concern:*

Be it known that I, JERRY J. LA DUCER, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Profiling Machines, of which the following is a specification.

This invention relates to machine tools, and particularly to profiling machines. Such a machine, as illustrated in the accompanying drawing, broadly comprises a base, a work table slidably mounted thereon, a cross rail supported on the base over the table, and one or a plurality of tool spindle supports slidably on the cross rail. Such a machine ordinarily works to a pattern and the operator is required, during the operation of the machine, to manually move the work table and tools in a manner to follow the contour of the pattern. For this reason it is particularly desirable to render these members as freely movable as possible.

In my copending application Serial No. 597,229, I have illustrated improved means for rendering the work table more freely movable by lessening the load of the table on its ways. My present invention relates particularly to improved means for rendering the tool supports more freely movable on the cross rail by supporting much of the weight thereof on anti-friction rollers, means being provided for adjusting the rollers as may be desired. The primary object of the invention is to provide improved means for performing the functions stated.

Another object of the invention is to provide each tool support with a plurality of levers, each lever carrying an anti-friction roller for engaging with the guideway of the cross rail, and means, preferably including resilient means, for individually adjusting each lever to support a desired portion of the weight of the tool support on the rollers.

With the above and other objects in view, my invention consists in the features of construction and operation set forth in the following specification and illustrated in the accompanying drawing. In such drawing annexed hereto and forming a part of this specification, I have shown one embodiment of my invention as applied to the tool supports of a profiling machine, but it will be understood that the invention can be other-

wise embodied and that the drawing is not to be construed as defining or limiting the scope of the invention, the claims appended to this specification being relied upon for that purpose.

Referring to the figures of the drawing: Figure 1 is a fragmentary front elevation of a profiling machine embodying my invention.

Fig. 2 is a side elevation thereof.

Fig. 3 is an enlarged fragmentary sectional view showing my improvement.

Referring more specifically to the drawing by reference characters, 1 indicates the base of the machine having a table 2 slidably mounted on horizontal ways 3 thereon. A pair of uprights 4 respectively bolted to the base at opposite sides of the table support a cross rail 5 thereon over the table. Two tool spindle supporting saddles 6 are illustrated as slidably mounted on the rail and movable therealong by means of a screw 7. A pair of tool spindles 8 are supported vertically in heads 9 slidable vertically in the saddles 6. Each spindle 8 carries a tool 10 and each head 9 carries a former pin 11 adjacent the tool for cooperating with a pattern in the well-known manner.

The tool spindles 8 are adapted to be rotated from a shaft 12. This shaft is driven through gearing 13 operated by a belt 14. The spindles may be moved vertically by operating handles 15 and 16. These and other cooperating mechanism not specifically illustrated and described herein are more specifically illustrated and described in my said copending application.

The table 2 is adapted to be moved along its ways by means of a screw 17. The screw may be rotated to move the table by means of a handle 18. The screw 7 may be rotated to move the tool support 6 along the cross rail by means of a handle 19. The operative connections from the said handles to the elements moved thereby are specifically illustrated and described in my before mentioned copending application.

The cross rail 5 is provided with two horizontally extending guideways 20 and 21. The saddles 6 are supported in sliding contact with the lower guideway 21, a gib 22 being interposed between guideway 21 and each saddle 6 in the usual manner. A pair of members or levers 23 are pivoted on each saddle above the guideway 20. Each of

these levers comprises a downwardly extending arm 23<sup>a</sup> and an upwardly extending arm 23<sup>b</sup>. An anti-friction roller 24 is mounted in the end of each arm 23<sup>a</sup> and in rolling contact with the guideway 20. A plug 25 is threaded into the saddle directly opposite the upper end of each arm 23<sup>b</sup> and a spring 26 is interposed between such plug and the lever. It will be understood that screwing the plug inwardly rotates the lever about its pivot against the spring 26 in a direction to force the roller into contact with the guideway and lift upwardly on the saddle.

In adjusting the saddles on the cross rail for the usual operation of the machine, the screw plugs 25 are so adjusted that the greater portion of the weight of the saddles is carried by the rollers 24. Sufficient weight is left on the lower guideway 21 to keep the saddles in sliding contact therewith. The interposed springs 26 function to maintain a smooth and constant counter-balancing of the saddles as will be understood.

The operation and advantages of my improved mechanism are believed to be clearly apparent from the above description. It will be noted that the work table is adapted to be moved in one direction by the operating handle 18 and the tool supports 6 are adapted to be moved in a relatively right angular direction by the handle 19. The table is rendered easily operative by the counter-balancing mechanism described in my aforementioned application and the tool supports are rendered easily operative by my improvements disclosed herein. In such improvements, the fine adjustment of the screw plugs 25 permits the carrying of the greater portion of the load of the supports 6 upon the anti-friction rollers 24. The operator can therefore with little effort move such supports along the cross rail in a manner to keep the former pins 11 in contact with the pattern. It should be understood that ordinarily one tool 10 is a roughing tool and the other tool 10 is a finishing tool. Such arrangement permits the rough cutting and finishing of a work piece from a single pattern and at one mounting of the work piece on the table.

What I claim is:

1. In a machine tool, the combination of a guideway support, a carriage slidably mounted thereon, a member pivoted to the carriage and having two arms radiating from the pivot, an anti-friction roller on one arm and in rolling contact with the guideway, and means engaging the other arm for adjusting the same about its pivot in a manner to transmit a portion of the weight of the carriage to the roller and guideway.

2. In a machine tool, the combination of

a guideway support, a carriage slidably mounted thereon, a member pivoted to the carriage and having two arms radiating from the pivot, an anti-friction roller on one arm and in rolling contact with the guideway, resilient means engaging the other arm, and means for adjusting the resilient means to move the member about its pivot in a manner to transmit a portion of the weight of the carriage to the roller and guideway.

3. In a machine tool, the combination of a guideway support, a carriage slidably mounted thereon, a bell crank pivoted to the carriage, an anti-friction roller on one arm of the bell crank and in rolling contact with the guideway, and adjustable resilient means engaging the other arm of the bell crank for adjusting the same about its pivot in a manner to transmit a portion of the weight of the carriage to the roller and guideway.

4. In a machine tool, the combination of a guideway support, a carriage slidably mounted thereon, a plurality of members each pivoted to the carriage and having two arms radiating from the pivot thereof, an anti-friction roller on one arm of each member and in rolling contact with the support, and adjustable resilient means engaging the other arms of the members for adjusting the same about their pivots in a manner to transmit a portion of the weight of the carriage to the rollers and support.

5. In a machine tool, the combination of a guideway support, a carriage slidably mounted thereon, a plurality of members each pivoted to the carriage and including a radiating arm, an anti-friction roller on each arm in rolling contact with the support, and adjustable resilient means cooperating with the members for independently adjusting each member about its pivot in a manner to transmit a portion of the weight of the carriage to the rollers and support.

6. In a machine tool, the combination of a guideway support, a carriage slidably mounted thereon, a plurality of members each pivoted to the carriage and having two arms radiating from the pivot thereof, an anti-friction roller on one arm of each member and in rolling contact with the support, and means engaging the other arm of each member for independently adjusting each member about its pivot in a manner to transmit a portion of the weight of the carriage to the rollers and support.

7. In a machine tool, the combination of a guideway support, a carriage slidably mounted thereon, a lever pivoted to the carriage, an anti-friction roller on the lever and in rolling contact with the guideway, an element screw threaded to the carriage, and a spring between the element and lever, the construction being such that rotation of the element adjusts the lever about its pivot

in a manner to transmit a portion of the weight of the carriage to the roller and guideway.

8. In a machine tool, the combination of  
5 a guideway support, a carriage slidably mounted thereon, a lever pivoted to the carriage and having two arms radiating from the pivot, an anti-friction roller on one arm of the lever and in rolling contact with the  
10 guideway, an element screw threaded to the carriage and a spring between the element and the other arm of the lever, the construction being such that rotation of the element adjusts the lever about its pivot in a manner  
15 to transmit a portion of the weight of the carriage to the roller and guideway.

9. In a machine tool, the combination of a work support, a horizontally extending cross rail over the support, a tool carriage  
20 slidably mounted on the rail, a plurality of levers pivoted to the carriage, an anti-friction roller on each lever and in rolling contact with the rail, and means including resilient means for independently adjusting  
25 each lever about its pivot in a manner to transmit a portion of the weight of the carriage to the rollers and rail.

10. In a machine tool, the combination of a work support, a cross rail over the support,  
30 the rail having a horizontally extending guideway thereon, a tool carriage slidably mounted on the rail, two levers respectively pivoted to opposite sides of the carriage over the guideway, an anti-friction  
35 roller on each lever and in rolling contact with the guideway, and means including re-

silient means for adjustably moving the levers about their pivots in a manner to transmit a portion of the weight of the carriage to the rollers and guideway. 40

11. In a machine tool, the combination of a work support, a cross rail over the support, the rail having a horizontally extending guideway thereon, a tool carriage slidably  
45 mounted on the rail, two levers pivoted to the carriage over the guideway, each lever having an upwardly extending arm and a downwardly extending arm, an anti-friction roller on each downwardly extending arm and in rolling contact with the  
50 guideway, and screw threaded means cooperating with the upwardly extending arms for adjusting the levers about their pivots in a manner to transmit a portion of the weight of the carriage to the rollers and  
55 guideway.

12. In a machine tool, the combination of a support, a pair of horizontally extending guideways thereon, one guideway being vertically above the other, a carriage slidably  
60 mounted on the support and in sliding contact with the lower guideway, resilient anti-friction means on the support and in rolling contact with the other guideway, and screw  
65 threaded means for adjusting the first said means to vary the amount of weight of the support carried by the anti-friction means on the upper guideway.

In testimony whereof, I hereto affix my signature.

JERRY J. LA DUCER.