

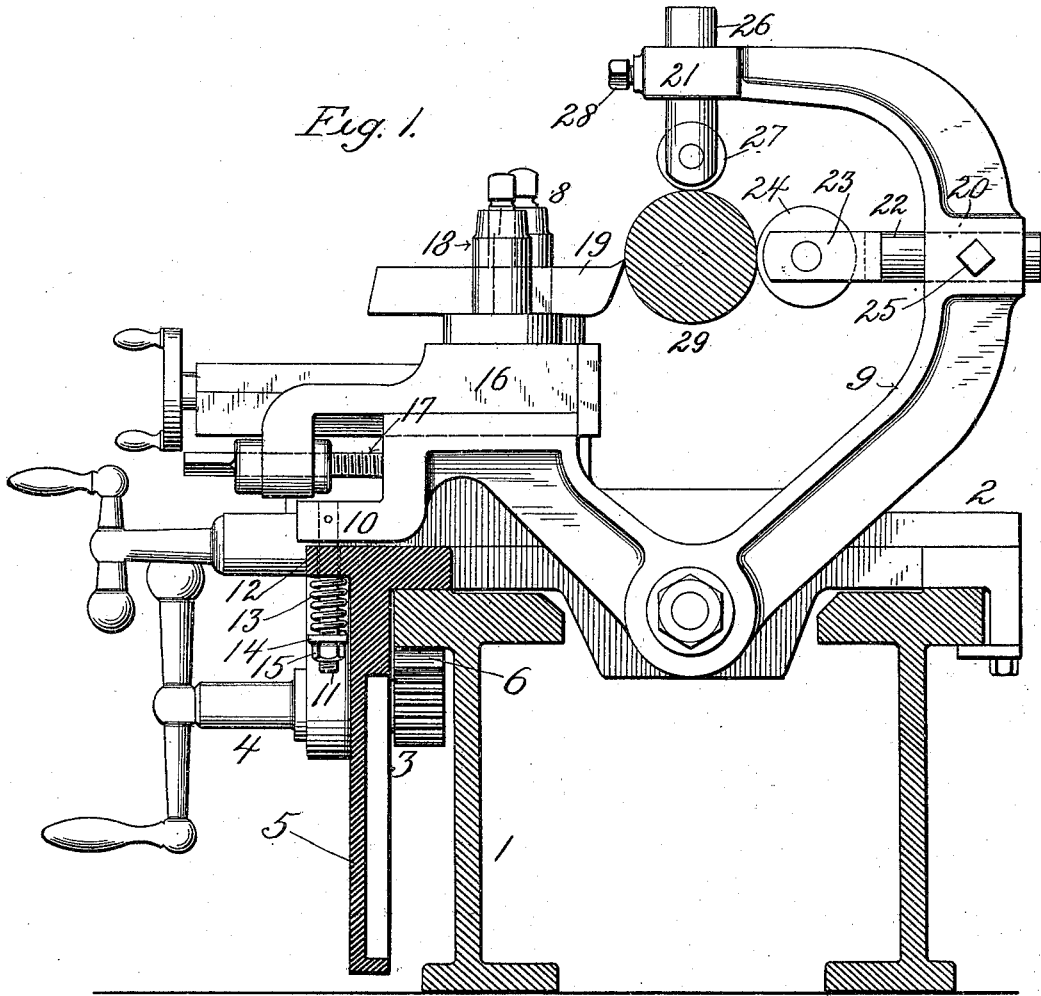
(No Model.)

3 Sheets—Sheet 1.

W. J. MUNCASTER.  
TOOL HOLDER AND CARRIER.

No. 605,504.

Patented June 14, 1898.



Witnesses  
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*J. M. Poub.*

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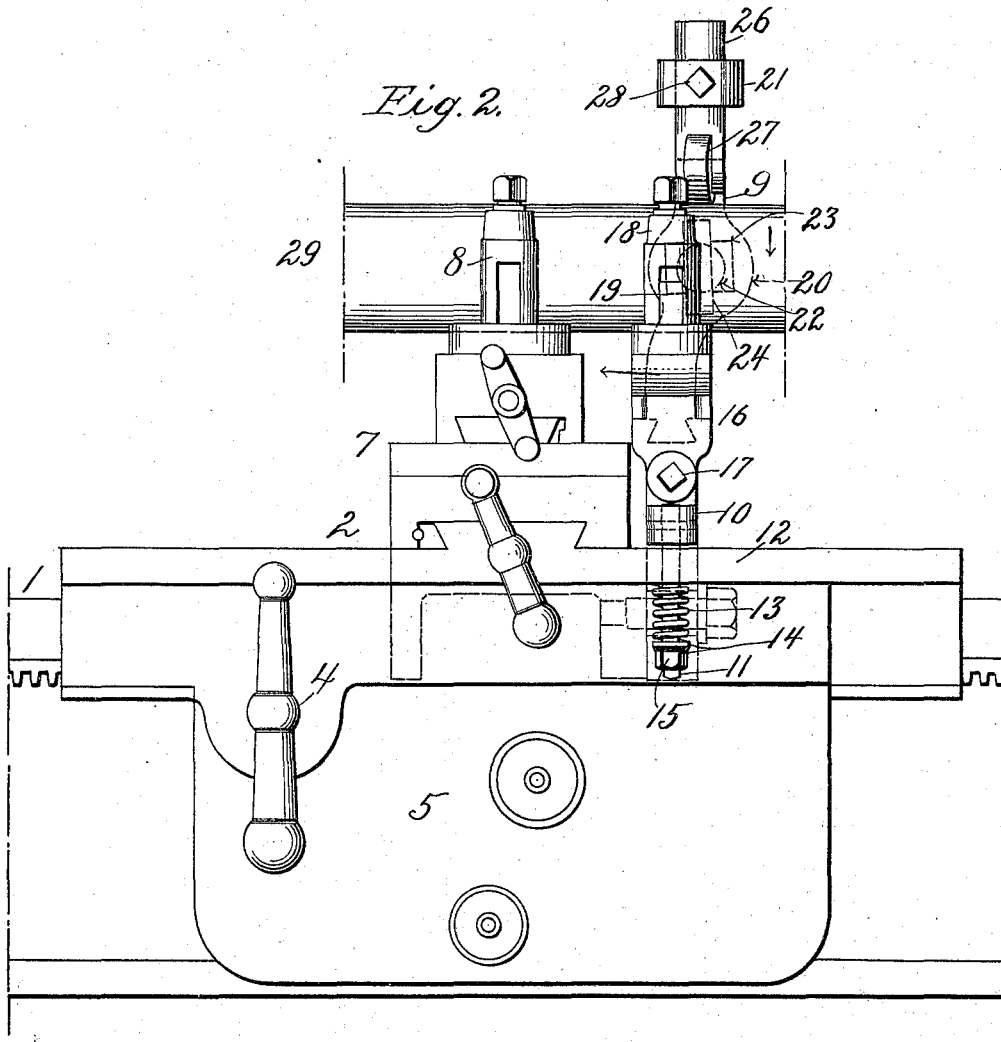
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3 Sheets—Sheet 2.

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TOOL HOLDER AND CARRIER.

No. 605,504.

Patented June 14, 1898.



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(No Model.)

3 Sheets—Sheet 3.

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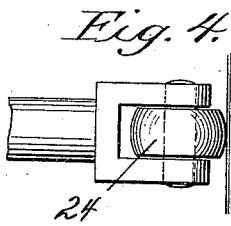
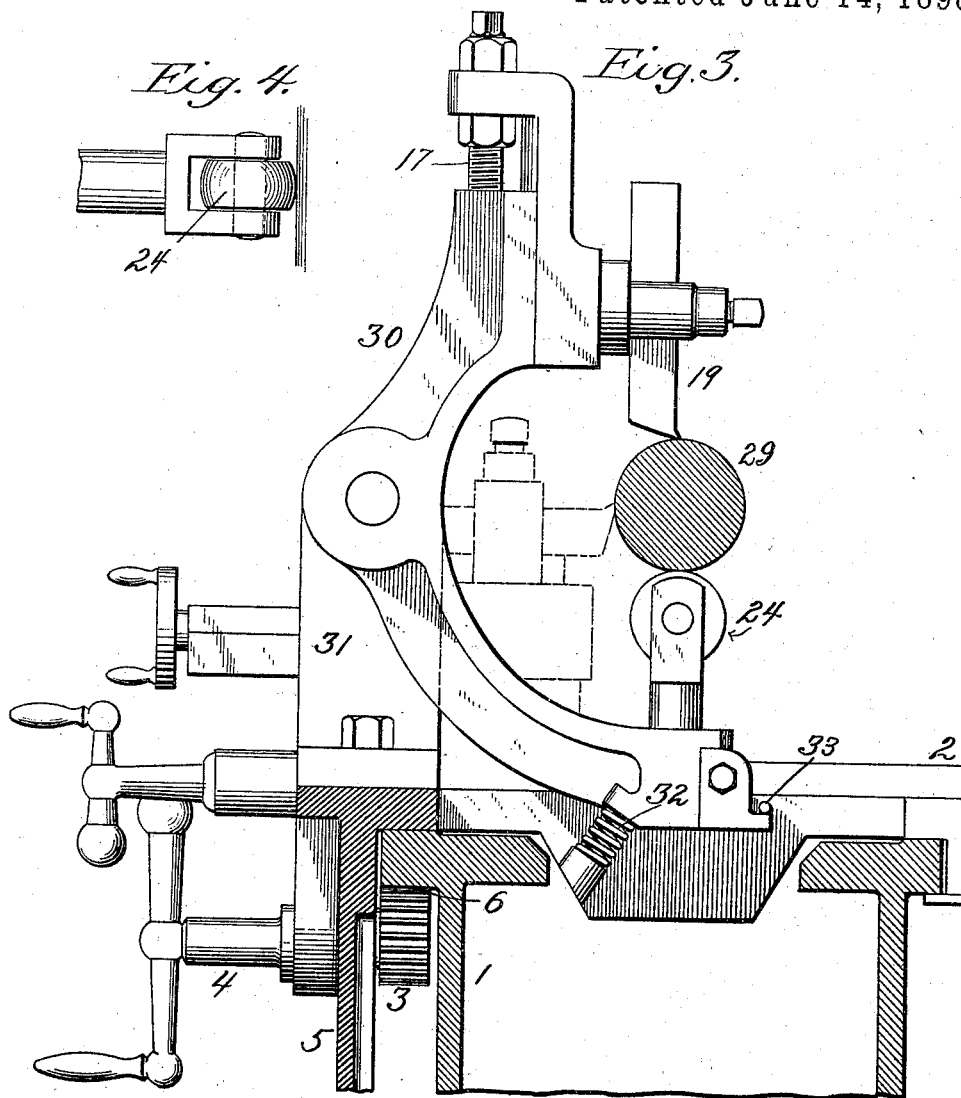
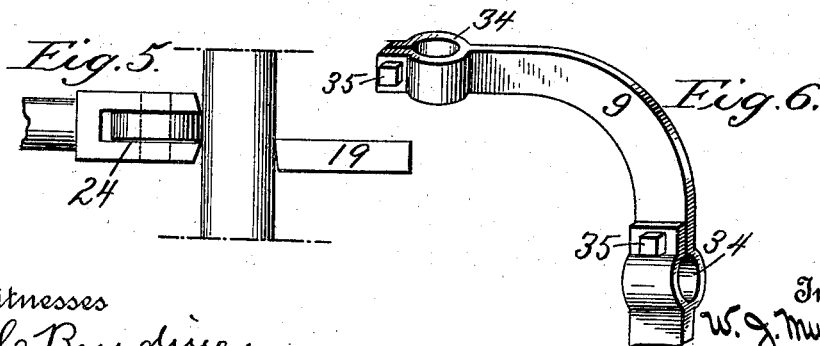


Fig. 3.



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# UNITED STATES PATENT OFFICE.

WALTER J. MUNCASTER, OF CUMBERLAND, MARYLAND, ASSIGNOR OF ONE-HALF TO THE CUMBERLAND IRON AND STEEL SHAFTING COMPANY, OF SAME PLACE.

## TOOL HOLDER OR CARRIER.

SPECIFICATION forming part of Letters Patent No. 605,504, dated June 14, 1898.

Application filed August 31, 1897. Serial No. 650,190. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER J. MUNCASTER, a citizen of the United States, residing at Cumberland, in the county of Alleghany and State of Maryland, have invented certain new and useful Improvements in Tool Holders or Carriers, of which the following is a specification.

My invention pertains to a tool holder or carrier for use in connection with lathes, and is designed to maintain the cutting or operating tool in contact with and in proper relation to the work despite the vibration thereof.

Figure 1 is a transverse section of the bed or frame of a lathe, showing the tool-holder in side elevation; Fig. 2, a front elevation of the same; Fig. 3, a side elevation showing the device in a modified form; Figs. 4 and 5, views of the guiding or bearing roller in slightly-varying but equivalent forms; Fig. 6, a perspective view of the frame or lever which carries the roller and the tool, showing friction-clamps for the stems of the roll-bearing yokes.

The device herein set forth is designed for the work of finishing small shafting or other cylindrical bodies of comparatively small diameter subject to considerable vibration, and it may be used in connection with or independently of tools adapted to make a heavier cut, as found expedient. Ordinarily I have found it convenient to use it simultaneously with such other cutting or reducing tools, but to locate it at such point as to cause it to operate upon that portion of the shafting or other body already treated by such other tools.

Referring first to Fig. 1 of the drawings, 1 indicates the bed of a lathe having at its top the usual ways to support and guide a slide 2, which may be moved lengthwise of said bed by a pinion 3, carried by a spindle 4, journaled in the apron 5 of the slide or in other proper support and meshing with a rack 6 on the bed or in any other usual or convenient manner. Upon the slide 2 is or may be mounted the usual cross-slide 7, with its tool-post 8, and the usual devices for adjusting the same.

9 indicates a frame or lever pivotally supported upon the side of the slide 2 at a point preferably directly below or in vertical plane

with the axis of the lathe-spindle. This lever 9 is formed with a tail or extension 10, from which a rod or stem 11 extends downward through an opening in a flange or overhang 12 of the slide 2, said rod or stem being encircled beneath said flange 12 by a spiral spring 13, beneath which are placed a washer 14 and nut 15, as shown in Figs. 1 and 2. The nut, screwing upon the threaded end of the rod, enables the operator to vary the compression of the spring 13, which spring tends constantly to draw downward the tail or extension 10 and to hold it in contact with the flange 12 of the slide.

Mounted upon and arranged to slide across the top of the forward arm of lever 9 is a slide 16, provided with an adjusting-screw 17 and bearing at its top a tool-holder 18, here represented as a post, designed or adapted to carry a chisel or cutter 19. Instead, however, of the tool-post the holder may be simply a support for a grinding or abrading tool, to which motion may be given from any convenient source.

The rear arm of the lever 9 extends upward from its pivot at an angle of approximately forty-five degrees, thence upward and forward to a point above the horizontal axis of the lathe-spindles, and consequently above the work extending between the spindles. This rear arm of the lever 9 is provided with two bosses or enlargements 20 and 21. Through the boss 20 is passed a cylindrical stem 22, terminating at its inner end in a yoke 23, in which is carried a loose roller 24. The stem 22 may be turned in the boss 20 to give its roller 24 any desired angle or to bring it to the proper point relatively to the work held in the lathe, and it is clamped at the desired adjustment by a set-screw 25 or is otherwise made fast.

Through the boss 21 is passed a smaller cylindrical stem 26, carrying at its inner end a roller 27, essentially the same as the roller 24, though it may advantageously be of smaller diameter. A set-screw 28 serves to bind the stem 26 at any desired adjustment, the cylindrical form of the stem permitting both longitudinal and angular adjustment, as in the case of the stem 22.

The roller 24 is arranged to bear upon the shafting or work 29 at a point opposite that at which the tool 19 makes contact therewith, or substantially so, while the roller 27 bears at a point about midway between the bearing-points of the tool and the roller 24; but the roller is arranged slightly out of vertical plane with the cutting-tool, so that it may bear upon a surface already dressed by the tool, as seen in Fig. 5. From this description it will be seen that if the shaft or other work 29 spring either upward or backward it will, by reason of its bearing against the rollers 27 and 24, swing the lever 9 about its pivot and cause the tool 19 to follow the work and to maintain its proper relation thereto, while if the vibration be toward the tool the tool may recede slightly, being drawn back by the action of spring 13 until the tail or extension 10 bears upon the rib 12.

The tool and roller constitute, in effect, a calipering device, insuring great uniformity in diameter and true circular form.

The tool 19 is designed only for giving the final finish, smoothness, or polish to the work and is set to take a very light cut; but it is found in actual use that this finishing action produces a result or a degree of smoothness and finish which it has hitherto been impossible to attain except by separate and special treatment at considerable expense, and even then it has been difficult or well-nigh impossible to secure such finish and at the same time maintain the true cylindrical form of the work.

The precise form of the lever 9 is not important, but its design may vary according to circumstances. Among such variations that illustrated in Fig. 3 will be found quite satisfactory, the lever 30, which is essentially the same as lever 9 of Fig. 1, being here represented as pivoted to a post or upright 31, bolted to the tool-slide 2. A spring 32, carried by the slide, tends to press the roller 24 against the work, while a stop-pin 33 limits the play of the lever.

It will be found advisable to set the rollers 24 and 27 at such angle as will correspond with the rate of travel of the slide 2 relative to the rate of rotation of the work. In other words, the rollers should have an inclination equal to the pitch of the thread that would be traced upon the surface of the work by a tool carried by the slide.

The device is commonly used with lathes to which the shafting is fed through an open head-stock, and it is desirable that the roller or rollers or the yoke in which the roller is carried be so fashioned as to permit the work to enter freely. This may be accomplished by beveling or curving the surface of the roll, as in Fig. 4, or by beveling the sides of the yoke, as in Fig. 5.

While the set-screws 25 and 28 answer well to hold the yoke stems or shanks, it is obvious that a split sleeve or sleeves 34 may be formed

in the lever 9 or 30 and provided with a binding screw or bolt 35, as shown in Fig. 6.

Blocks may be substituted for the rollers.

As above suggested, the roller bearing upon and held constantly against a finished portion of the shaft follows it in all its vibrations and holds the finishing-tool always in the proper relation thereto, the whole constituting a calipering device movable with the work, but maintaining always the proper relation between the two arms of the calipers or between the work and the tool.

The essential feature of the device is the combination of a cutting-tool on one side and a guide on the opposite side of the work connected one with the other and so pivoted that the tool shall move in response to or in unison with the guide, the latter being kept in contact with a finished surface of the work by a spring or its equivalent.

The second roller is desirable in the absence of a "steady-rest" capable of properly supporting the work, but may be omitted when such rest is employed.

The device may be fixed upon the bed of the lathe and the work be arranged to travel, as is common in many shafting-lathes with other tool-holders.

Having thus described my invention, what I claim is—

1. In combination with a lathe, a rest or bearing device at one side of the spindle-axis; a tool at the opposite side thereof; a connection between the rest and the tool whereby they are caused to move in unison; and a spring arranged to hold the rest normally in contact with the work in the lathe.

2. In combination with the tool-slide of a lathe, a tool holder or carrier pivotally supported upon said slide, having a tool-support at one side of the axis of the lathe-spindles, and a roller at the opposite side of said axis adapted to bear upon the work carried by the lathe, the tool-support and the roller being held in fixed relation to each other while the device is in operation.

3. In combination with the tool-slide of a lathe, a tool holder or carrier pivotally supported upon said slide, having a tool-support at one side of the axis of the lathe-spindles, and rollers respectively at the opposite side of and above said axis adapted to bear upon the work carried by the lathe, the tool-holder and the rollers being clamped and held in fixed relation to each other preparatory to operation of the device.

4. In combination with the bed of a lathe, a tool-slide 2; means for moving said slide lengthwise of the lathe-bed; a frame or lever 9 pivotally supported upon said slide; a tool-support carried by said frame or lever; and bearing-rollers 24 and 27 also carried by said lever and serving to hold the tool against the work between it and the rollers.

5. In combination with lathe-bed 1, tool-slide 2; means for moving said slide along

the bed; frame or lever 9 pivotally supported upon said bed; a spring serving to rock the frame or lever forward upon its pivot; a tool-holder carried by said frame; and cylindrical stems 22 and 26 adjustably mounted in the frame or lever and provided at their inner ends with rollers 24 and 27, substantially as described and shown.

6. The herein-described tool holder or carrier consisting of a tool-slide 2; a lever or frame 9 pivotally supported thereon and provided with tail or extension 10; a rod or stem 11 extending from said tail through a flange or projection on the tool-slide and encircled by a spring 13; a nut or enlargement upon

said stem beneath the spring; a tool-slide adjustable upon the lever; a cylindrical stem movable horizontally through the lever and carrying a bearing-roller 24 at the rear of the work; a cylindrical stem at the upper end of the roller carrying a bearing-roller 27 above the work; and binding-screws for securing said stems at the desired adjustments, substantially as set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

WALTER J. MUNCASTER.

Witnesses:

RICHARD J. BRUCE,  
ALBERT CHARLES.