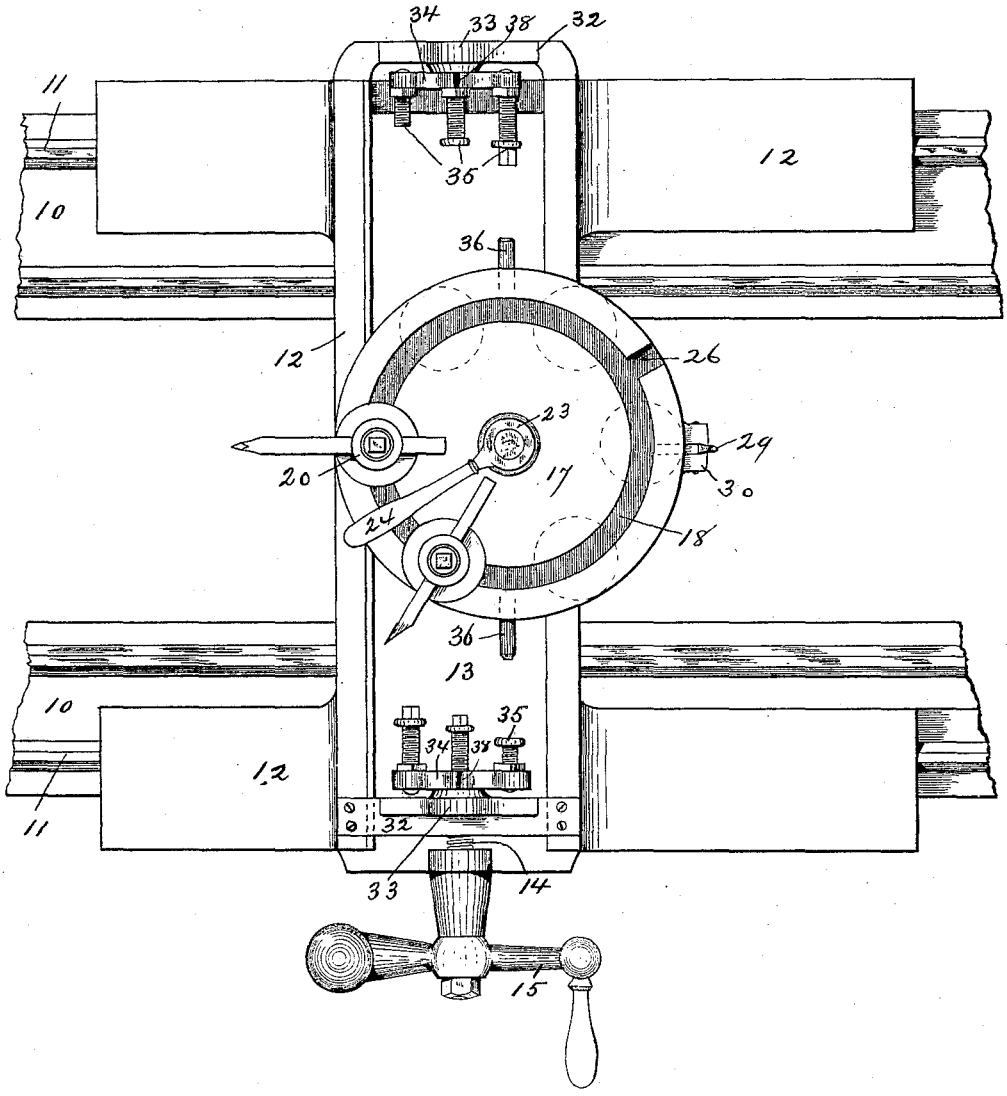
(No Model.) 2 Sheets—Sheet 1.

J. JENNINGS.

LATHE.

No. 452,524. Patented May 19, 1891.

Fig. 1.



Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

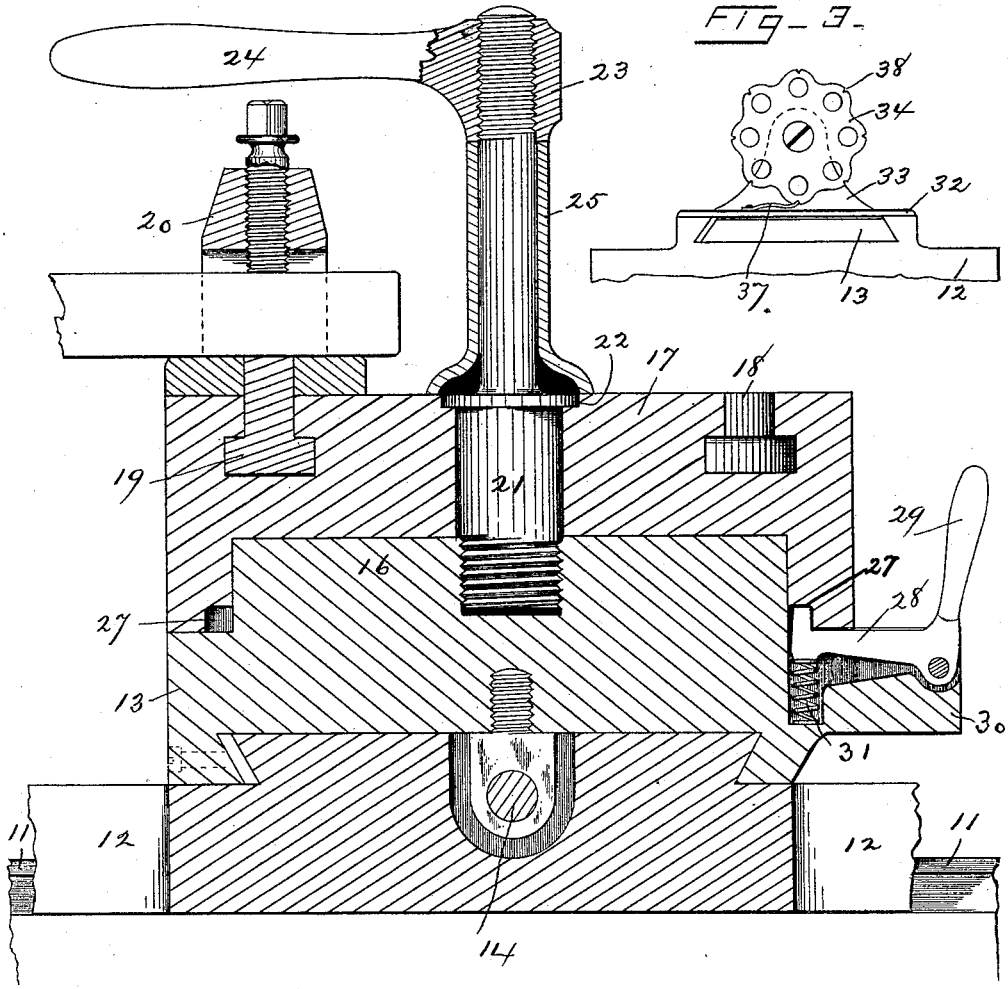

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN JENNINGS, OF NEW LONDON, CONNECTICUT.

LATHE.

SPECIFICATION forming part of Letters Patent No. 452,524, dated May 19, 1891.

Application filed December 1, 1890. Serial No. 373,154. (No model.)

To all whom it may concern:

Be it known that I, JOHN JENNINGS, a citizen of the United States, residing in the city and county of New London, and State of Connecticut, have invented certain new and useful Improvements in Lathes, which improvements are fully set forth and described in the following specification, reference being had to the accompanying two sheets of drawings.

This invention has relation particularly to the tool-holding devices of engine-lathes, and has for its object the improvement of such devices, to the end that a multiple of turning or boring tools, or both, may be suitably supported and quickly brought into proper position for use when desired. In lathes of this class where a single tool-post is provided for clamping the turning-tool said post may be supported on a carriage that is fed forward on suitable ways on the lathe-bed by means of a screw extending along said bed, and said carriage is also capable of being moved or fed transversely to the described forward movement, thus providing a universal movement of the tool-post in a horizontal plane. When it is required to use more than one form or style of tool in such a lathe—as, for example, in changing from a "diamond-point" to a "side tool" or from a side tool to a "squaring-up" tool—it becomes necessary to remove the tool last used and to substitute and adjust the one next required, thus losing considerable time and also "breaking up" the proper adjustment of the first-named tool. In making these changes and adjustments it frequently happens that more time is consumed than is required to perform the desired work after the adjustment has been completed.

My present invention seeks to save the time thus wasted, and provides a tool-holder having the forward and transverse feed movements of the above-described tool-holders, and provided also with means for supporting a multiple of tools, either of which may be quickly brought into operative relation to the work to be performed.

My invention further consists in various details of construction, all of which are fully described hereinafter.

In the annexed drawings, Figure 1 is a plan view of a tool-holder of my new form, showing also the carriage on which said holder is mounted and portions of the latheways on which said carriage travels and is supported. Fig. 2 is an enlarged vertical central sectional view of a similar tool-holder; and Fig. 3 is a front face view or elevation of one of the revoluble heads 34, provided to support a series of gages that control and limit the transverse feed movement of the said tool-holder.

In the drawings, 10 denotes a portion of the bed of an engine-lathe, and 11 ways mounted or formed thereon. Seated on the ways 11 is a carriage 12, that may slide lengthwise of the lathe-bed, and on this carriage, arranged to slide in transverse ways, is a second carriage 13, that is moved by a feed-screw 14 and connected hand-wheel or crank 15, all of the parts thus far specified and their movements being precisely as in engine-lathes as now commonly constructed.

Midway of the length of the transverse carriage 13 is an upwardly-projecting circular plate or boss 16, which may be an integral part of said carriage or may be securely secured thereto. This plate or boss is provided to receive and support a turret-head tool-holder 17, which is one of the important features of my invention. The lower face of said turret-head is cupped to fit over the boss 16, and its upper face is formed with an annular groove or channel 18, that is cut under on both sides, as plainly shown in Fig. 2, to receive the T-shaped end 19 of the tool-posts 20, said posts being of the ordinary form. The turret-head 17 and boss 16 are secured together by a screw 21, whose threaded end is tapped into the boss and whose head 22 rests in the counterbored upper face of the turret-head, said screw being of such length that when turned home the turret-head may revolve freely on the boss, yet cannot be raised from it. The upper end of screw 21 (above head 22) is turned down and threaded at its end to receive a nut 23, having an operating-handle 24. Between nut 23 and the turret-head is a tubular section 25, whose lower end is flared or enlarged to abut and rest on the upper face of the turret-head, (surrounding the head 22.) When the nut 23 is screwed home, the tubular section 25 is forced downward against the turret-head and serves to clamp together said head and the boss 16, rendering them practically as one piece.

Within the undercut channel 18 several

tool-posts may be placed, a radial cut 26 being made from said channel to the perimeter of the turret-head, so that the T end 19 may be readily entered, and these several tool-posts may support a series of cutting or boring tools, each properly fashioned and adjusted to perform its part in the development of the work required to be done. After having used one of said tools the turret-head 17 may be quickly rotated or partly rotated to bring into operative position the next tool of the series, the first one being simply swung aside until again needed, but retaining its proper adjustment.

In order to bring each tool to the same position when about to use it, I preferably cut a series of notches 27 on the inner edge of the turret-head, corresponding with the number of tool-posts that may be used, and provide a latch or bolt 28, that may enter one of said notches 27, as shown at the right hand of Fig. 2. This latch is here formed with an operating-handle 29 and is pivoted in a slot in a lateral extension 30 of carriage 13, the free end of said latch being forced upward into notch 27 by a spring 31. When it is desired to bring into use a new tool, the handle of nut 23 is grasped and said nut unscrewed sufficiently to relieve the pressure of tube 25 on the turret-head. The handle of latch 28 is then grasped and forced inward, (toward the turret-head,) thus withdrawing its end from notch 27, when the turret-head may be freely revolved to bring into operative position the required tool. Latch 28 then enters the coincident notch 27, the nut 23 is screwed home, and the lathe is again ready to begin work.

Having now described the turret-head, by means of which a multiple of tools may be supported and brought successively into use without readjustment, I will proceed to describe an improved system of stops or gages by means of which the transverse movement of the turret-head and its attached tools may be limited and controlled in either a forward or backward direction. Attached to carriage 12 are bridges 32, having upwardly-projecting plates 33, to which are pivoted disks 34, that may be revolved in a vertical plane. These disks are bored and tapped to receive screws or bolts 35, that are of various lengths, conforming to the desired or required movement of the turret-head. Projecting from opposite sides (front and rear) of boss 16 are studs or rods 36, so located that as the carriage 13 is fed forward or backward said studs engage and are stopped by one of the screws 35, which will thus act as a gage. As the different cutting-tools are brought into use by rotating the turret-head, as described, disks 34 may also be rotated on their supporting-pivots to bring into the path of studs 36 the proper screw or gage 35. Disks 34 are held against accidental rotation by springs 37, that enter notches 38 in the perimeter of said disk. These springs and notches provide sufficient friction to hold the disks against displacement by the ordinary jar of the lathe, but do not prevent the operator from easily rotating them by hand, when necessary, or from operating them by automatic means, if desired, which may be of any ordinary construction, and are therefore not shown in the drawings, as they form no part of my invention.

I have stated above that the carriages 12 and 13 are controlled and moved by screws in manner identical with the corresponding parts of lathes now in common use, and I have therefore thought it unnecessary to illustrate and explain such screws in detail.

I am well aware, too, that holders in the form of turret-heads for supporting drills, reamers, and similar tools are commonly used with screw-machines, and I therefore do not seek to claim, broadly, a turret-head tool-holder.

What I do claim as new, and desire to secure by Letters Patent, is—

1. In a lathe, the combination, with a carriage having a universal movement in a horizontal plane and provided with a circular plate or boss, of a turret-head cupped upon its lower face to fit upon the boss and having an annular undercut groove or channel in its upper face and a screw through it for fastening it upon the boss, substantially as described.

2. In a lathe, the combination, with a carriage having a universal movement in a horizontal plane and provided with a circular plate or boss and an extension, of a turret-head upon the boss having notches in its under face and means for securing tools on its upper face, a spring-actuated catch in the extension, a stud upon the opposite sides of the boss, and a gage at each end of the carriage, with which the studs engage, substantially as described.

3. In a lathe, in combination with a tool-carriage having a universal movement in a horizontal plane, a turret-head tool-holder mounted on said carriage, and a series of interchangeable gages mounted on the carriage-support in the path of said turret-head, as set forth, to limit the movements of said tool-holder.

4. In combination with a tool-carriage having a universal movement in a horizontal plane, a turret-head tool-holder mounted on said carriage, and gages, as set forth, consisting of disks capable of rotation in a vertical plane, bearing projecting studs, either of which may be swung into the path of the turret-head tool-holder to limit its forward or backward movement, all being substantially as herein specified.

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