M. C. BERSTED.

TOOL HOLDER FOR LATHES.

APPLICATION FILED NOV. 17, 1913.

1,109,031. Patented Sept. 1, 1914.

Fig 1.

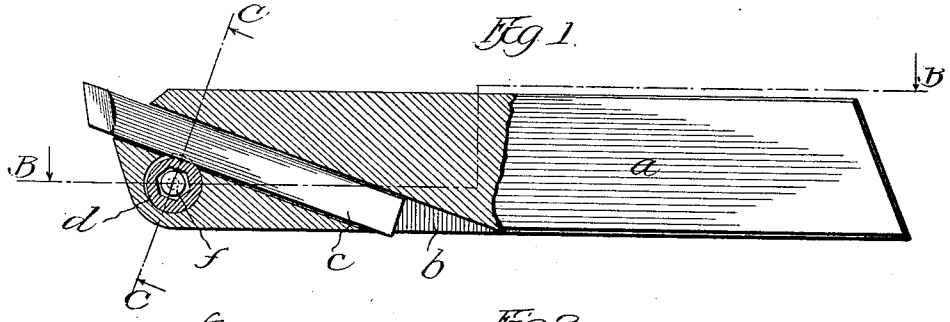


Fig 2.

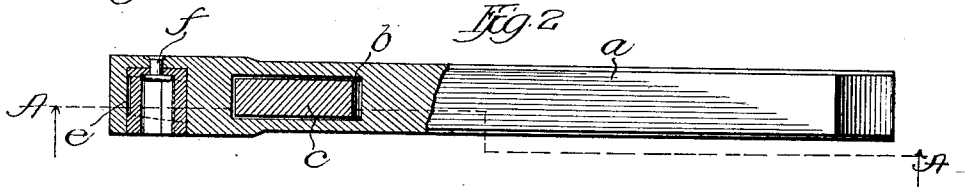


Fig 3.

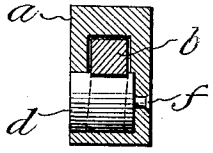


Fig 4

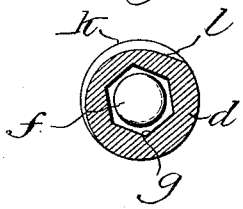


Fig 5

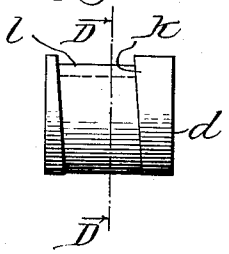


Fig 6.

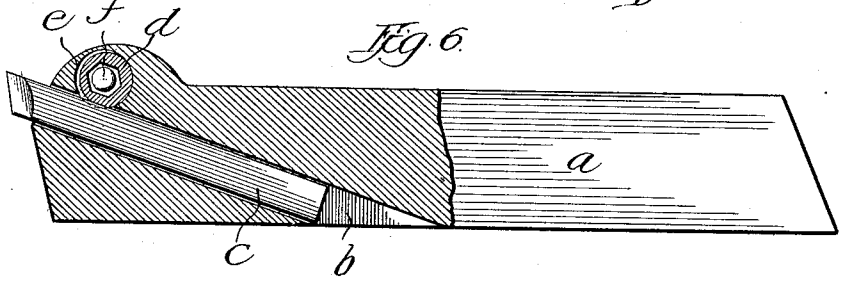
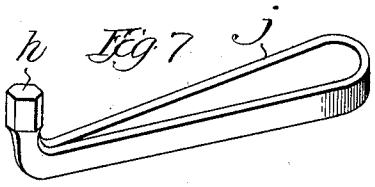


Fig 7



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UNITED STATES PATENT OFFICE.

MARTIN C. BERSTED, OF CHICAGO, ILLINOIS.

TOOL-HOLDER FOR LATHES.

1,109,031. Specification of Letters Patent. Patented Sept. 1, 1914.

Application filed November 17, 1913. Serial No. 801,334.

To all whom it may concern:

Be it known that I, MARTIN C. BERSTED, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tool-Holders for Lathes, of which the following is a full, clear, and exact specification.

My invention is concerned with cutting tools for lathes, and is designed to produce such a tool that can be ground in any desired manner for any kind of cutting, and that can be quickly and securely fastened in a narrow bar by a single movement of a wrench in such a manner that the thrust of the work against the tool cannot possibly serve to loosen it, but rather tends to tighten it.

To illustrate my invention, I annex hereto a sheet of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which,—

Figure 1 is a side elevation of a tool holder embodying my invention, a portion thereof being in section on the line A—A of Fig. 2; Fig. 2 is a top plan view of the same, with part thereof in section on the line B—B of Fig. 1; Fig. 3 is a detail in section on the line C—C of Fig. 1; Fig. 4 is a central section through the locking cylinder, on the line D—D of Fig. 5; Fig. 5 is a side elevation of the locking cylinder, it and Fig. 4 being on a larger scale than the remaining figures; Fig. 6 is a view similar to Fig. 1, but showing the tool located below the locking cylinder; and Fig. 7 is a perspective view of the preferred form of wrench which I use in connection with the tool.

The bar *a* is of the proper size and shape to be secured in the customary manner in the post of the slide-rest, and has extending diagonally therethrough a slot *b* which is preferably square in its shortest cross-section provided the cutting tool *c* has the same cross-section, which is the preferred form. This slot *b* may be located above the locking cylinder *d*, as seen in Fig. 1, or below it, as seen in Fig. 6, just as is preferred. The slot *b* has its vertical sides parallel to the sides of the bar, so that the tool *c* will likewise have its sides vertical. This arrangement enables me to grind the tool to any desired kind of a point or shape that may be necessary in doing any kind of cutting that lathe or similar work calls for.

The locking cylinder *d* is snugly mounted in a cylindrical recess *e* bored into the side of the end of the bar, which may be slightly widened for this purpose, if desired, and the cylinder is held in place so that it is free to rotate by the rivet *f* extending through an aperture in the bottom of the cylinder and riveted in place in the bar in a manner which will be readily apparent in Figs. 2 and 3. The cylinder *d* has formed therein a recess *g*, which is in the form of a regular polygon, preferably a hexagon in cross section, as best seen in Fig. 4, and adapted to receive the hexagonal head *h* of the wrench *j* which is used to turn the cylinder to lock the tool in position. The locking cylinder is set flush in the bar *a*, so that there is nothing to prevent the tool being conveniently brought into immediate proximity to any sort of work that may be necessary. The locking cylinder *d*, as best seen in Figs. 4 and 5, is provided with a channel *k* on its periphery, and this channel has in the bottom thereof a flat surface *l*, which is in position to permit the tool being slid freely into the recess *b* when the tool is to be inserted or withdrawn. This flat surface engages the tool when it is unlocked and prevents the cylinder being turned farther than the proper unlocking position, and it also serves the purpose in the locking operation of compelling the workman to turn the wrench in the right direction to clamp the tool. From this flat portion *l* of the bottom of the channel *k*, the bottom is then curved on a constantly increasing radius until the channel merges in the regular periphery of the locking cylinder. This forms a cam surface, so that when the cylinder is turned by the wrench after the tool is inserted, the tool is securely clamped against the opposed face of the recess *b*, which opposed face would be the top side of the recess in the form shown in Fig. 1 and the bottom side in the form shown in Fig. 6. It is, however, desirable to clamp the tool not only against the opposed face of the aperture *b* just mentioned, but also against one of the adjacent sides, so as to prevent any possible displacement of the tool laterally; and to secure this result, I form on one of the sides *m* of the channel *k* a second cam surface, which is formed by placing the channel slightly diagonally, as it were, of the surface of the cylinder. When the cylinder is turned to lock the tool, the cam side *m* of the channel simultaneously forces the tool against one side of the aperture *b*, which side

is at right angles to the opposed side against which it is forced by the cam formed by the bottom of the channel *k*.

The operation of my improved tool holder will be readily apparent. When the tool is inserted in the bar *a*, the locking cylinder is in the position shown in Figs. 1, 4 and 6, and the wrench *j* has its head *h* inserted in the aperture *g*. The wrench is then turned in the only direction possible, which movement serves to rotate the cylinder to locking position, and it will be noted that the incline to the bottom of the channel *k* is so located in all forms that the thrust of the work against the cutting end of the tool which tends to rotate the locking cylinder simply serves to rotate it in the direction which causes it to lock, and thus the harder the thrust of the work on the tool, the more securely the same is locked.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a device of the class described, the combination with a holding bar having a diagonal passage therethrough of a shape to accommodate a cutting tool having the body thereof rectangular in its shortest cross section, a vertical side of the passage being parallel to the vertical sides of the bar, of a tool rectangular in its shortest cross section extending through the passage, and a locking cylinder journaled in the bar adapted to be turned therein by extraneous means and having some of its cylindrical surface projecting into the passage and adapted to engage the tool, said cylinder having a channel therein wider than the adjacent side of the tool forming two cam surfaces thereon, the cam surface formed by the bottom of the channel which gradually increases in depth coöperating with one side of the tool, while the second cam surface is formed on one side of the channel, both cam surfaces lying so that the thrust of the work on the cutting tool tends to rotate the cylinder to tighten its grip on the two sides of the tool engaged by it and to jam its opposite sides against the opposed walls of the passage.

2. In a device of the class described, the combination with a holding bar having a diagonal passage therethrough of a shape to accommodate a cutting tool having the body thereof rectangular in its shortest cross section, a vertical side of the passage being parallel to the vertical sides of the bar, of a tool rectangular in its shortest cross section extending through the passage, and a locking cylinder journaled in the bar having an aperture therein polygonal in its cross section and adapted to be turned in the bar by a tool coöperating with the aperture and having some of its cylindrical surface projecting into the passage and adapted to engage the tool, said cylinder having a channel therein wider than the adjacent side of the tool and forming two cam surfaces thereon, the cam surface formed by the bottom of the channel which gradually increases in depth coöperating with one side of the tool, while the second cam surface is formed on one side of the channel, both cam surfaces lying so that the thrust of the work on the cutting tool tends to rotate the cylinder to tighten its grip on the two sides of the tool engaged by it and to jam its opposite sides against the opposed walls of the passage.

3. In a device of the class described, the combination with a holding bar having a diagonal passage therethrough of a shape to accommodate a cutting tool extending therethrough and having the body thereof rectangular in its shortest cross section, a vertical side of the passage being parallel to the vertical sides of the bar, of a locking cylinder journaled in the bar, adapted to be turned therein by extraneous means, and having some of its cylindrical surface projecting into the passage and adapted to engage the tool, said cylinder having a channel therein wider than the adjacent side of the tool and forming two cam surfaces thereon, the cam surface formed by the bottom of the channel, which gradually increases in depth, cooperating with one side of the tool, while the second cam surface is formed on one side of the channel, both cam surfaces lying so that the thrust of the work on the cutting tool tends to rotate the cylinder to tighten its grip on the two sides of the tool engaged by it and to jam its opposite sides against the opposed walls of the passage.

In witness whereof, I have hereunto set my hand and affixed my seal, this 15th day of November, A. D. 1913.

MARTIN C. BERSTED. [L. S.]

Witnesses:
JOHN HOWARD MCELROY,
MILDRED ELSNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."