

(No Model.)

F. H. RICHARDS.
TOOL HOLDING DEVICE.

No. 481,193.

Patented Aug. 23, 1892.

Fig. 1

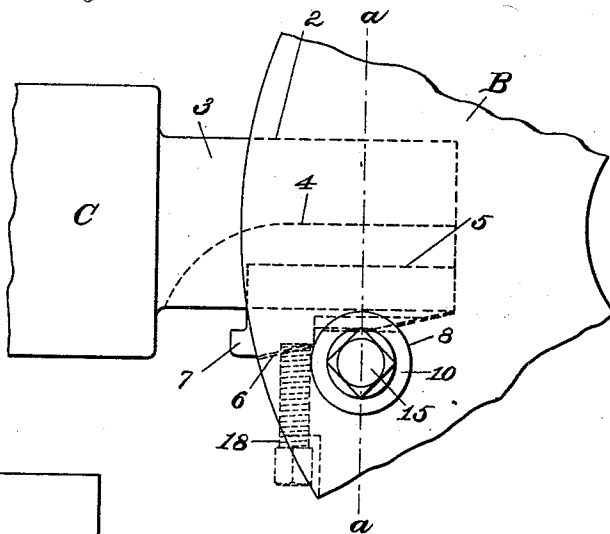


Fig. 3

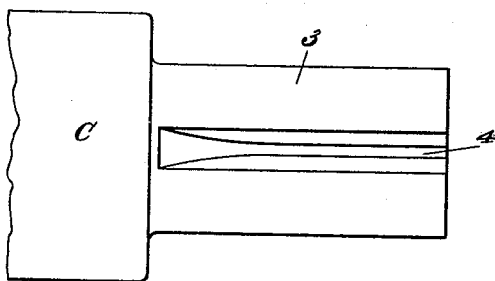


Fig. 2

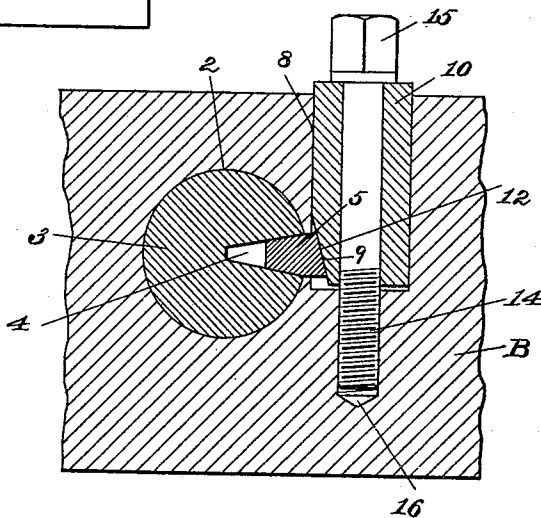


Fig. 4

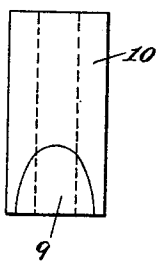


Fig. 5

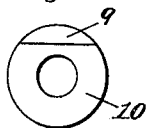


Fig. 6

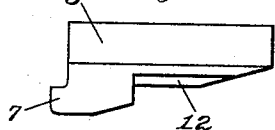
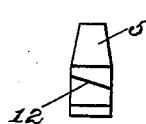


Fig. 7



Witnesses:

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UNITED STATES PATENT OFFICE

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TOOL-HOLDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 481,193, dated August 23, 1892.

Application filed November 23, 1891. Serial No. 412,868. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, 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 Tool-Holding Devices, of which the following is a specification.

This invention relates to means for securely holding the shanks of tools in sockets therefor, the object being to secure the tool in place by expanding the shank thereof within the socket formed to receive it.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view of a portion of the turret of a turret-lathe and of a portion of a tool fitted therein and having my improved tool-holding device. Fig. 2 is a sectional view in line *a a* of Fig. 1. Fig. 3 is a side view of the tool-shank and shows the groove or keyway formed therein. Fig. 4 is a side view of the key-actuating wedge. Fig. 5 is an end view of the same drawn in projection with Fig. 4. Fig. 6 is a plan view of the key or wedge for expanding the tool-shank. Fig. 7 is an end view of the same as seen from the right hand in Fig. 6.

Similar characters designate like parts in all the figures.

The improvement herein described is more especially designed for securing tools in the turrets of turret-lathes. Accordingly in the drawings I have shown a portion of a lathe-turret, which is designated by B, bored at 2 to receive the shank 3 of a tool, that is designated in a general way by C. Said shank has a groove or keyway 4 formed therein to receive one edge of the wedge or key 5, and the turret B is slotted, as at 6, at one side of the bore 2 thereof to receive the other edge of the wedge 5, which said wedge has a projection 7 formed thereon to serve as a means for withdrawing the same from the groove 4 of the tool-shank should it at any time stick therein. The turret is bored at 8 to receive the wedge 10, which is beveled, as at 9, at or near the lower end thereof to fit the inclined face 12 of the wedge 5. The binding-screw 14 passes freely through said wedge 10 and engages a threaded hole 16 in the turret. By means of this screw the wedge 10 may be drawn downward to force the key 5 into the

slot 4, as will be readily understood from Figs. 1 and 2.

In using my improved tool-fastening, the key 5 having been placed in the keyway and the binding-wedge 10 and binding-screw 14 having been assembled on the part B, as illustrated in the drawings, the user first inserts the shank 3 of the tool C in the bore 2, the tapered key 5 entering the groove 4 of the tool-shank, and then by means of a wrench applied to the squared head 15 of the screw 14 draws downward the wedge 10, and thus forces the wedge 5 into said tool-shank, groove, or keyway 4. This expands the tool-shank within the part B with a powerful force, and thereby securely holds the tool in place. It will be observed that the wedge-shaped key while it operates to expand the tool-shank at the same time acts to prevent rotation of the tool.

While the means hereinbefore described for forcing in the key 5 are deemed preferable and most effective, other means may be used therefor. One other said means is illustrated in Fig. 1 by dotted lines at 18, where an ordinary set-screw, thus designated, is shown acting against the key to force the same into the groove 4. The key 5 being of considerable length relatively to the thickness thereof and the wedge 10 being located to act upon the key about midway of its length, the force applied to the key to drive the same into the keyway 4 of the shank is naturally distributed toward one or the other end of the key, accordingly as the one or the other end of the shank requires to be expanded more than the other, in order to bring the shank to a firm fit within the shank-receiving bore. By this means, in connection with the slight elasticity existing in practice in all of the parts, the shank 3 is readily expanded to a perfect fit within the bore throughout the entire length thereof. The wedge 10, being cylindrical, turns in the shank-carrying part to conform properly to any varying inclination in a horizontal plane of the shank-expanding key 5.

Having thus described my invention, I claim—

1. The combination, with the part bored to receive and carry the shank and with the

shank fitting said bore and having a tapered keyway, of the key fitting said keyway and means, substantially as described, carried by the shank-receiving part 4 forcing the key to expand the shank within the bore, substantially as described.

2. The combination, with the part bored to receive the shank and with the shank fitting said bore and having a tapered keyway, of the key fitting said keyway in the shank and projecting into a corresponding keyway in the said bored part and means forcing the key to expand the shank within the bore, whereby the key serves to expand the shank and to prevent the rotation thereof, substantially as described.

3. The combination, with the part bored to receive the shank and with the shank fitting said bore and having a tapered keyway, of the key fitting said keyway, a key-actuating wedge, and means operating said wedge to force the key into the keyway of the shank, substantially as described.

4. The combination, with the part bored to receive the shank and with the shank fitting said bore and having a tapered keyway, of the key fitting said keyway, the key-actuating wedge fitted to turn and slide in said shank-carrying part, and a screw for actuating the key through said wedge, substantially as described.

5. The combination, with the part bored to receive and carry the shank, of a shank fitting said bore and having in one side and longitudinally thereof a recess, substantially as described, a shank-expander in said recess, and means carried by the shank-receiving part and acting upon the shank-expander in a direction crosswise to the shank, whereby the shank is expanded at one side thereof within said bore, substantially as described.

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