

No. 851,877.

PATENTED APR. 30, 1907.

S. S. FULLER.  
TOOL HOLDER.

APPLICATION FILED OCT. 8, 1906.

2 SHEETS—SHEET 1.

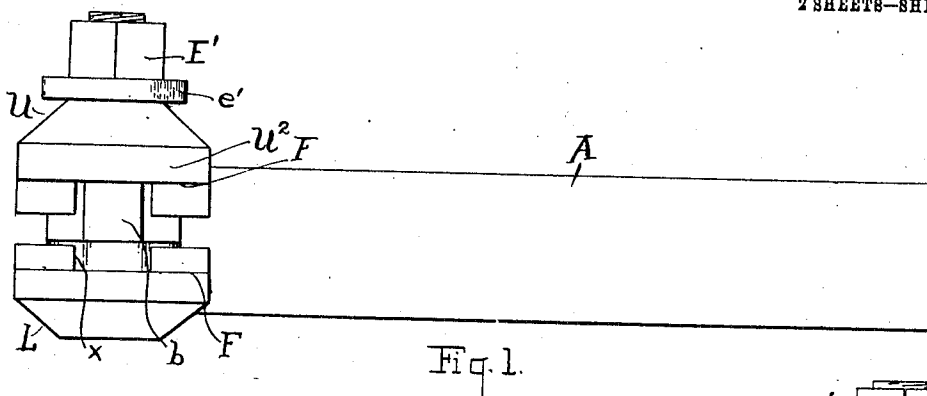


Fig. 1.

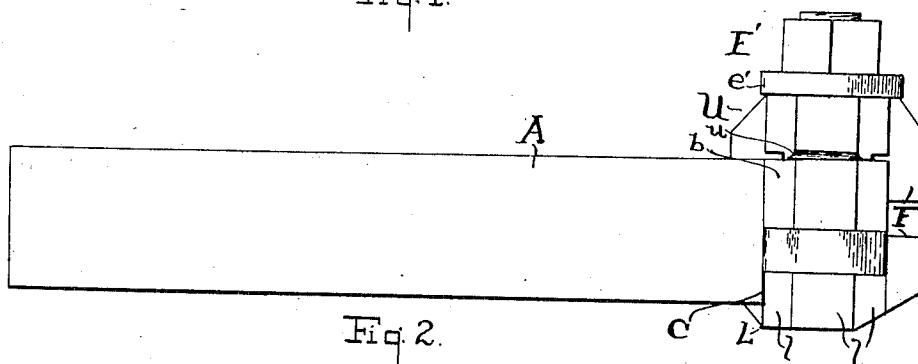


Fig. 2.

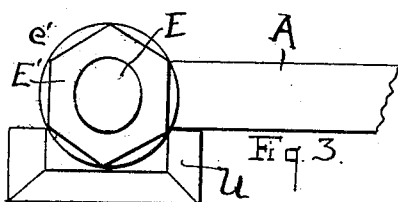


Fig. 3.

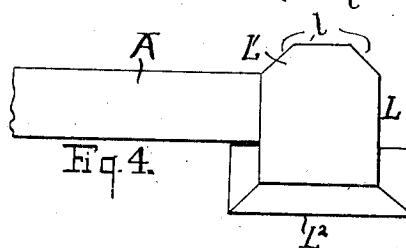


Fig. 4.

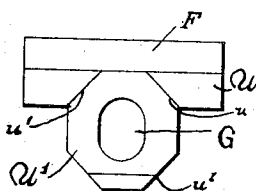


Fig. 13.

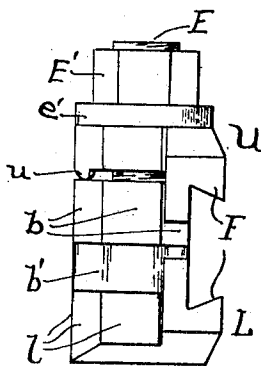


Fig. 5.

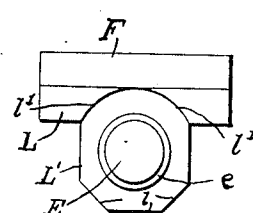


Fig. 14.

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Silas Stillman Fuller  
INVENTOR.

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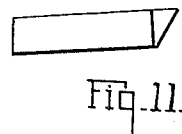
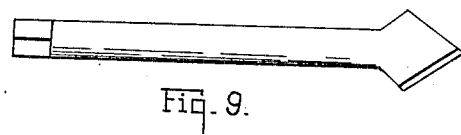
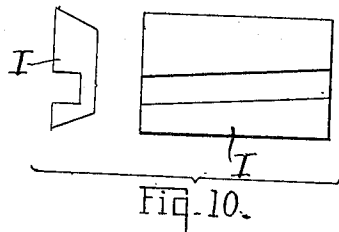
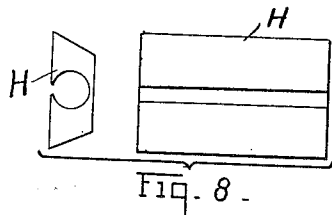
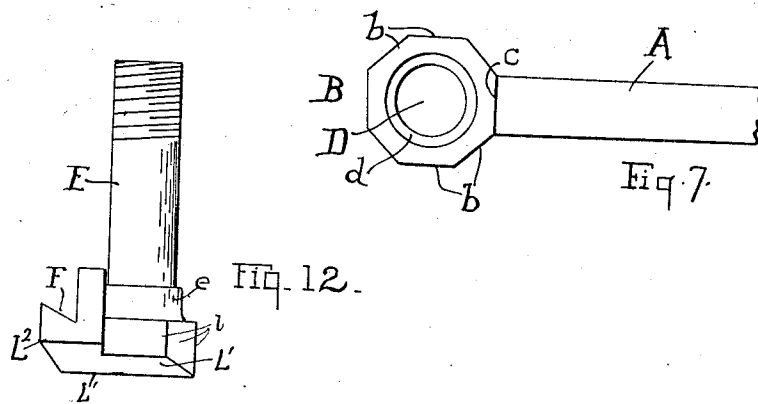
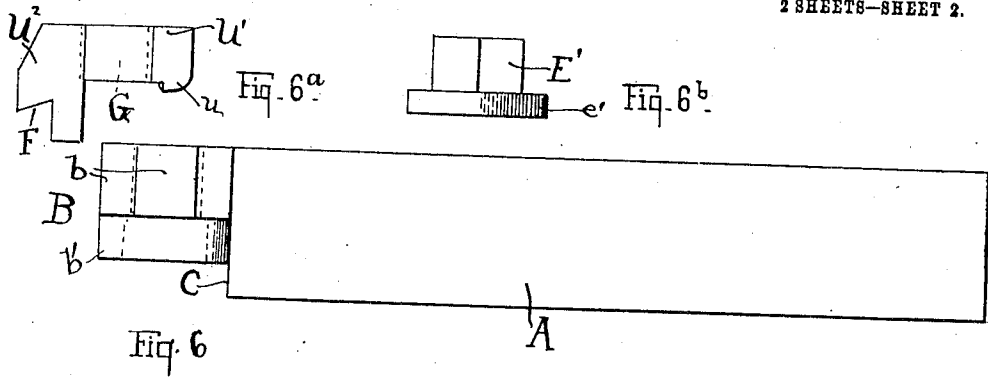
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2 SHEETS—SHEET 2.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

SILAS STILLMAN FULLER, OF AUBURN, MAINE.

## TOOL-HOLDER.

No. 851,877.

Specification of Letters Patent.

Patented April 30, 1907.

Application filed October 8, 1906. Serial No. 337,905.

*To all whom it may concern:*

Be it known that I, SILAS STILLMAN FULLER, a citizen of the United States, residing at Auburn, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Tool-Holders, of which the following is a specification.

This invention relates to improvement in tool holders and particularly to an improvement in tool holders adapted to be used in lathes and in turning, boring, shaping and slotting machines.

It is the object of the present invention to provide a tool holder which will be capable of general use and which will make possible the use of cutting tools ground from usual tool stock without the necessity of having different special single holders or specially forged tools.

It is also my object to produce a tool holder of few and simple parts arranged to secure by adjustment and reversibility all the positions necessary to properly present the tool in the various kinds of work required in the machines above mentioned.

To this end I have devised a combination of shank and clamping jaws in which the parts may be so relatively assembled as to hold a tool firmly and securely and properly presented to perform the work desired.

In the specification which follows and in the drawings which form a part thereof, like letters of reference indicate corresponding parts throughout.

In the drawings, Figure 1, is a side view of my tool holder. Fig. 2, is a view of the opposite side. Fig. 3, is a top plan view of the holder. Fig. 4, is a bottom view. Fig. 5, is a front end view. Fig. 6 is a view of the shank. Fig. 6<sup>a</sup> is a side view of the upper clamping member, and Fig. 6<sup>b</sup> is a side view of the clamping nut. Fig. 7, is a bottom view of the shank head, and, Fig. 8, indicates a form of bushing used for tools having cylindrical shanks, as illustrated in Fig. 9. Fig. 10 is a similar bushing adapted for use with tools having angular shanks, such as those made from regular tool stock, as shown in Fig. 11. Fig. 12 is a view of the lower clamping member of my holder. Fig. 13 is a plan view of the inner face of the upper clamping member, and, Fig. 14 is a similar view of the lower clamping member.

A is a shank of suitable form and dimensions adapted to be clamped in the usual manner in the tool post. B is a head having

a plurality of lateral bearing faces formed on the end of said shank which I preferably make in octagonal form with side bearing faces *b*, for the reasons hereinafter explained, and C is a shoulder formed below the head on the shank.

*b'* is a rounded portion on the lower end of the head.

D is a bolt opening through the head for the passage of the clamping bolt E.

*d* is a counter bore to receive the fillet *e* on the clamping bolt E.

U is an upper clamping member comprising a plate U<sup>1</sup> and a double ended jaw U<sup>2</sup>.

L is a lower clamping member comprising a plate L<sup>1</sup> and a double ended jaw L<sup>2</sup>.

*l* are external octagonal faces.

F are opposing grooves in the jaws U<sup>2</sup>, L<sup>2</sup> which form a dovetail recess between them within which the tool or bushing may be clamped as will be hereinafter explained. The grooves F therefore have overhanging tools engaging lips disposed at an acute angle to the lateral surfaces of the jaws and to the surface of the head which lies in the same plane therewith when the parts are assembled.

*u* is a heel formed on the plate U<sup>1</sup> on the opposite side from the jaws U<sup>2</sup>, said heel being adapted to bear against the upper side of the head to secure a slight tipping of the jaws when they are pinched together by the tightening of the bolt E.

G is a bolt opening through the clamping member U, said opening being slightly elongated laterally to allow for the slight tipping caused by the heel when the jaws are tightened without binding the bolt E.

The bolt E is preferably formed integral with the lower clamp L for convenience in adjusting the parts.

H and I are bushings adapted to hold tools, the bushing I being adapted to hold a turning tool and being made with a slot I<sup>1</sup> which may be sloped in either direction to secure a right hand or a left hand presentation of the tool. These bushings may be made to hold a tool of any size or make from any size stock.

The bushing H is bored to hold a drill shank or an internal threading or boring tool. Both are practically split bushings and spring slightly to grip the tool and both are beveled to correspond to the bevel of the jaws with the open part of the bushings located on the broader face so that when in place the tool will come against the inside of the jaw and

the exposed face of the head, and be clamped against them by the pinching of the jaws as they are tipped together by the tightening of the nut E<sup>1</sup> on the bolt E.

5 e<sup>1</sup> is a washer preferably formed integral with the nut E.

The members U and L are provided on their inner faces with bearing surfaces u<sup>1</sup> and l<sup>1</sup> which correspond to the bearing faces of the head and between these surfaces a space x is left through which one of the faces b of the head is exposed. I find that a superior clamping effect is secured by leaving exposed through this opening, that face of the head 15 which lies parallel with the tool. This allows the tool or the bushing holding the tool to be firmly clamped, not merely against the side of the jaw, but also against one side of the head. This very materially steadies the different 20 parts as it affords an additional bearing between the different elements of the tool holder and the tool itself.

In the octagonal structure which I have shown, the jaws may be arranged to hold the 25 tool parallel with the shank or at an angle of 45° or square across the end on either side. To shift the tool from one side to the other it is only necessary to unscrew the nut, swing around the jaws and reclamp the parts by 30 again tightening the nut.

In assembling the holder the bolt shank E of the lower clamping member L is inserted in the opening D of the shank head from the lower side which is counterbored at d. The 35 upper clamping member U is then slipped over the end of the bolt E, with its jaw F parallel with the jaw F of the lower member and the nut E<sup>1</sup> is then screwed onto the end of the said bolt.

40 To adjust the clamp members about the head the nut is slackened sufficiently to allow a play of the members on the head sufficient to clear their bearing surfaces u<sup>1</sup> and l<sup>1</sup> from the surfaces b and C respectively. With these 45 surfaces disengaged the clamp members can be freely turned about the head to any position desired.

What I therefore claim and desire to secure by Letters Patent, is:—

50 1. In a tool holder, the combination of a shank, a head thereon having a plurality of lateral bearing faces, a pair of double ended jaws having corresponding bearing faces adapted to co-operate therewith mounted 55 upon said head, and means for clamping said jaws in operative position.

2. In a tool holder, a shank having a clamp supporting head, a clamp having a plurality of lateral faces mounted on said head, and a 60 shoulder on said shank adapted to engage one of said faces in each position of adjustment.

3. In a tool holder, the combination of a shank, a head thereon having a plurality of lateral bearing faces, a jaw having an open- 65 ing therein exposing the face of said head par-

allel thereto, means for clamping said jaw in operative position, and means for tipping said jaw toward said exposed face when clamped.

4. In a tool holder, the combination of a 70 shank, a head thereon having a plurality of lateral bearing faces, a pair of jaws having an opening therebetween exposing the face of said head parallel thereto, means for clamping said jaws in operative position, and 75 means for tipping one of said jaws toward said exposed faces when clamped.

5. A tool holder having at one end a head, a plurality of lateral faces on said head, a central vertical opening, a pair of clamps 80 straddling said head and each provided with a lateral bearing surface adapted to co-operate with a lateral face of said head, each clamp having on its side a jaw, an opening between said jaws for exposing a lateral face 85 of the head, and a heel on one clamp adapted to bear on said head on the opposite side of said central opening, and a bolt uniting said clamping members through said central opening.

6. A tool holder having at one end a head, an opening centrally therethrough, a plu- 90 rality of lateral faces thereon, a pair of clamping members each provided with a lateral bearing surface adapted to co-operate 95 with one face of said head, and a bolt uniting said clamping members through said central opening.

7. In a tool holder, the combination of a shank, a head thereon having a plurality of 100 lateral faces, a pair of jaws having corresponding bearing faces mounted upon said head, and means for clamping said jaws in operative position.

8. In a tool holder, the combination of a 105 shank, a head thereon having a plurality of lateral faces, and a tool clamp having corresponding bearing faces mounted upon said head.

9. A tool holder consisting of a shank hav- 110 ing at one end a head, a plurality of lateral faces thereon, an adjustable clamp mounted thereon having an opening to expose the parallel face of the head, and a lateral bear- 115 ing face on each side of said opening adapted to co-operate with the corresponding face of said head.

10. A tool holder consisting of a shank having at one end a head, a plurality of lat- 120 eral faces thereon, a two part clamp having an opening to expose the parallel face of the head, and a lateral bearing face on each side of said opening adapted to co-operate with the corresponding face of said head, and means for adjustably supporting said clamp 125 centrally on said head.

11. A tool holder consisting of a shank, a head thereon having a plurality of lateral faces, a clamp having two or more faces for bearing upon the lateral faces of said head, 130

and an opening between said faces on the jaw to expose a lateral face on the head.

12. A tool holder consisting of a shank having at one end a head, a plurality of lateral faces thereon, a clamp thereon having a pair of jaws bearing upon one or more of the lateral faces of said head, an opening between said jaws exposing one of said faces, and means for causing one of said jaws to tip toward said exposed face of the head in closing.

13. A tool holder consisting of a shank having at one end an equilateral polyhedric head, a clamp having a lateral bearing face adapted to co-operate with the faces of said head, and means for adjustably supporting said clamp centrally on said head.

14. A tool holder consisting of a shank having at one end an equilateral polyhedric head, a clamp having a plurality of lateral bearing faces adapted to co-operate with the faces of said head, and means for adjustably supporting said clamp on said head.

15. In a tool holder, the combination of a shank, a jaw adjustably mounted thereon, external bearing faces on said jaw, and a shoulder on the shank adapted to co-operate with said external faces to hold the jaw in the desired position.

16. In a tool holder, a head having a lateral face, a tool jaw having a tool bearing

face, an opening in said tool bearing face, and means for holding the tool jaw on the head with the lateral face exposed and in the same plane with the tool bearing face.

17. A tool holder having a head, a bearing surface thereon, a clamp having a pair of jaws, means for closing said jaws, an opening therebetween exposing said bearing surface on the head, a lateral bearing surface on said jaws in the same plane as said exposed surface on the head, one of said jaws having a tool engaging lip at an angle to said lateral surfaces and means for causing said lip to approach said lateral surfaces in closing.

18. A tool holder having a head, a bearing surface thereon, a clamp having a pair of jaws, means for closing said jaws, an opening therebetween exposing said bearing surface on the head, a lateral bearing surface on said jaws in the same plane as said exposed surface on the head, one of said jaws having a tool engaging lip surface disposed at an acute angle to said lateral surfaces and means for causing said lip to approach the lateral surfaces in closing.

In testimony whereof, I affix my signature in presence of two witnesses.

SILAS STILLMAN FULLER.

Witnesses:

SILAS B. FULLER,  
JAY B. STRONG.