

(No Model.)

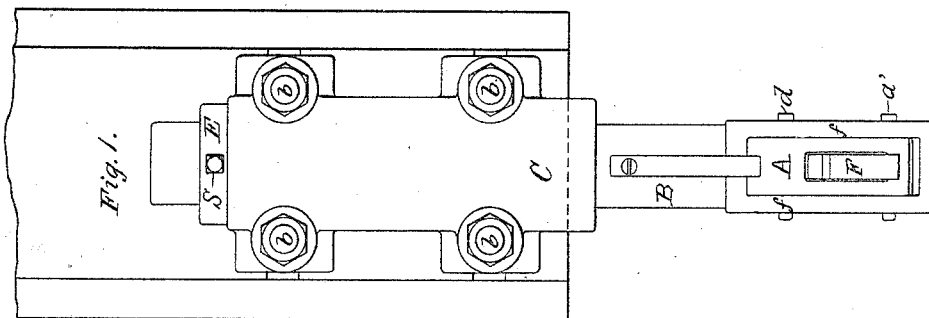
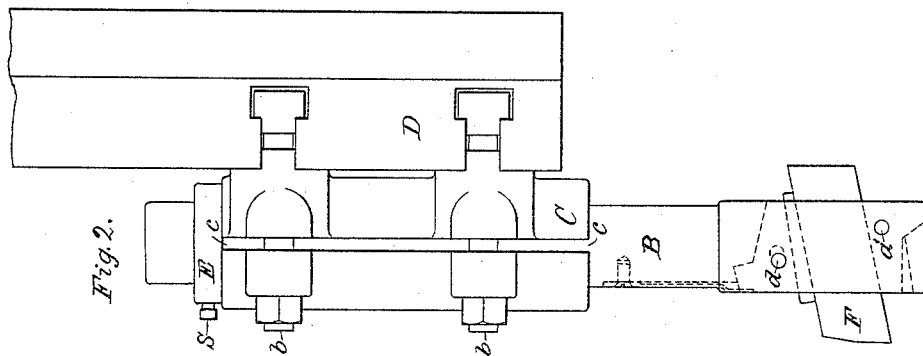
2 Sheets—Sheet 1.

S. BENSON.

TOOL HOLDER FOR SLOTTING MACHINES.

No. 421,345.

Patented Feb. 11, 1890.



WITNESSES:

*John L. Phillips*  
*E. A. Harper*

INVENTOR

*Samuel Benson*  
by *M. S. Sellers* atty

(No Model.)

2 Sheets—Sheet 2.

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Fig 6.

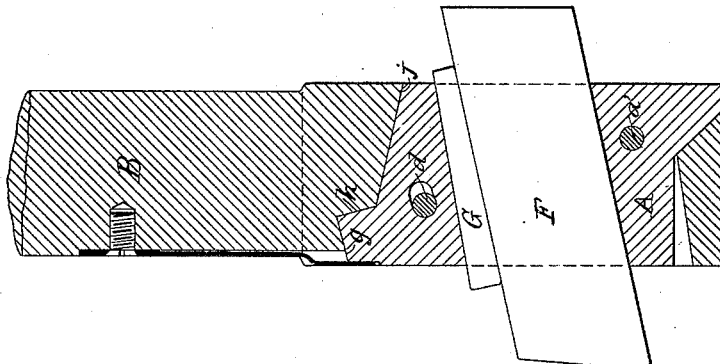


Fig 5.

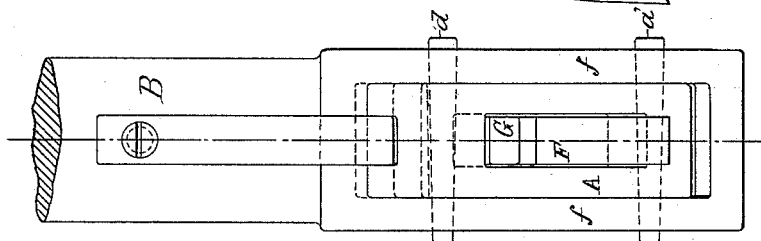


Fig 4.

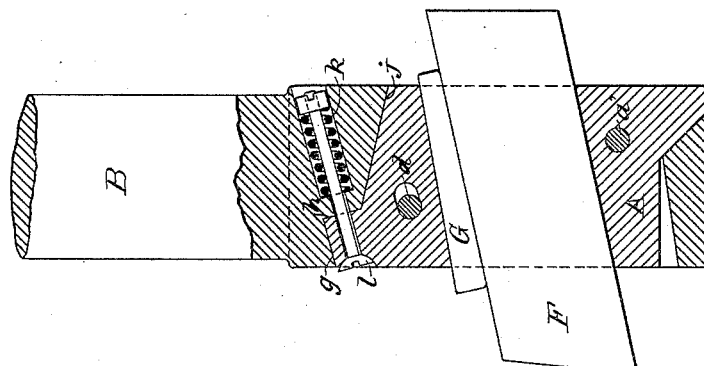
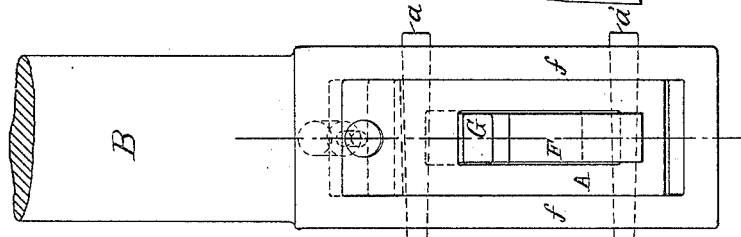


Fig 3.



WITNESSES:

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INVENTOR

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# UNITED STATES PATENT OFFICE.

SAMUEL BENSON, OF BUTTE CITY, MONTANA, ASSIGNOR TO THE WILLIAM SELLERS & COMPANY, INCORPORATED, OF PHILADELPHIA, PENNSYLVANIA.

## TOOL-HOLDER FOR SLOTTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 421,345, dated February 11, 1890.

Application filed November 27, 1889. Serial No. 331,790. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL BENSON, a citizen of the United States, residing at Butte City, in the county of Silver Bow and State of Montana, having invented a new and useful Improvement in Tool-Holders for Slotting-Machines, of which improvement the following is a specification.

The cutting-tools for slotting-machines usually work in spaces of very limited areas, in which it has heretofore been impossible to make use of the swinging tool-holder commonly employed upon planing-machines, by means of which the cutting-tool is relieved from dragging heavily over the work on its upward or return stroke; and the object of my present improvement is to provide a swinging tool-holder for a slotting-machine which is capable of supporting the tool rigidly and relieving it on the upward stroke within very much narrower limits than has heretofore been possible. It is a further object of my improvement to rotate such a tool-holder about a vertical axis, so as to present the tool to its work in any direction radial to this axis.

The nature of my improvement consists in placing the axis of the swinging tool-holder in advance of the cutting-tool; and it further consists in securing this swinging holder underneath upon its end surfaces farthest removed from the axis about which it swings, which surfaces are respectively tangent to and radial to this axis; and it further consists in supporting the swinging tool-holder within a bar which can be revolved about its vertical axis and clamped in position in a bearing carried upon the slotting-bar of the machine.

In order that my invention may be more clearly set forth, reference will now be had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a front elevation of the lower end of a slotting-bar with my improved tool-holder secured thereto by four bolts. Fig. 2 is a side elevation thereof. Fig. 3 is a front elevation of the lower end of the bar which carries my swinging tool-holder. Fig. 4 is a sectional elevation of the same in a

plane passing through the axis of Fig. 3 and at right angles to the axis about which the tool-holder swings. Fig. 5 is a front elevation similar to Fig. 3, exhibiting a modification of the spring shown in Fig. 3; and Fig. 6 is a sectional elevation of Fig. 5.

In all of the drawings similar letters refer to similar parts.

A is the swinging tool-holder vibrating about the pin *a'*, which pin is carried by the bar B, which in turn is supported in the bearing C on the end of the slotting-bar D, Figs. 1 and 2. One side of this bearing C has a groove *c c* cut through it to the bar B, so that when the bolts *b b b b* are tightened the bearing C will be compressed upon the bar B and hold it rigidly. When these bolts are loose the bar B can be revolved freely within the bearing C, and is only prevented from dropping out of it by the collar E, which is secured upon the bar B by the set-screw S. The bar B may be of any desired length and the collar E may be secured upon it at any desired height to suit the required position of the cutting-tool below the end of the slotting-bar. The use of the collar E is to facilitate the adjustment of the bar B about its vertical axis, and to afford a simple means for adjusting the vertical height of this bar and of maintaining it when adjusted.

This sectional elevation, Fig. 4, shows clearly the construction and mode of operation of the swinging tool-holder A. The pin *a'*, about which it vibrates, is in advance of the cutting-tool F, which passes through a slot provided for the purpose in the tool-holder, and is secured therein by the wedge G. Above this wedge a pin *d* is provided, to limit the vibratory movement of the tool-holder. This pin passes through the side pieces *f f* of the bar B, and the amount of movement for the tool-holder A is determined by the length of the slot in A through which the pin *d* passes.

The upper end of the tool-holder A is provided with a surface *g* tangent to a circle having its center in the axis of the pin *a'*. Another surface *h* is in a plane radial to the same axis, and a third surface *j* forms an obtuse angle with the second surface *h*. The bar B is provided with surfaces correspond-

ing therewith, whereby the strains arising from the action of the cutting-tool are fully provided for.

To make sure that the swinging tool-holder  
5 A shall be properly seated when the tool F commences its cut, I provide the spiral spring *k* and bolt *l*, the tension of the spring serving to keep the tool-holder in the position shown, unless some impediment to the upper or back-  
10 ward stroke of the cutting-tool should cause the tool-holder to lift from the surface *h*, to which it would return as soon as the impediment was passed.

Figs. 5 and 6 show another form of spring,  
15 which in some cases might be preferable.

Having thus fully shown and described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A cutting-tool holder provided with an axis in advance of the cutting-tool, about 20 which axis the cutting-tool swings, substantially as described.

2. A swinging tool-holder which sustains the cutting strain upon surfaces respectively tangent to and radial to the axis, about which 25 axis the holder swings, substantially as described.

3. A swinging tool-holder rotatable about a vertical axis, in which axis it may be adjusted to rotate in any plane and be secured 30 at any height, substantially as described.

SAMUEL BENSON.

Witnesses:

FRANCIS T. MCBRIDE,  
GEO. HALDOM.