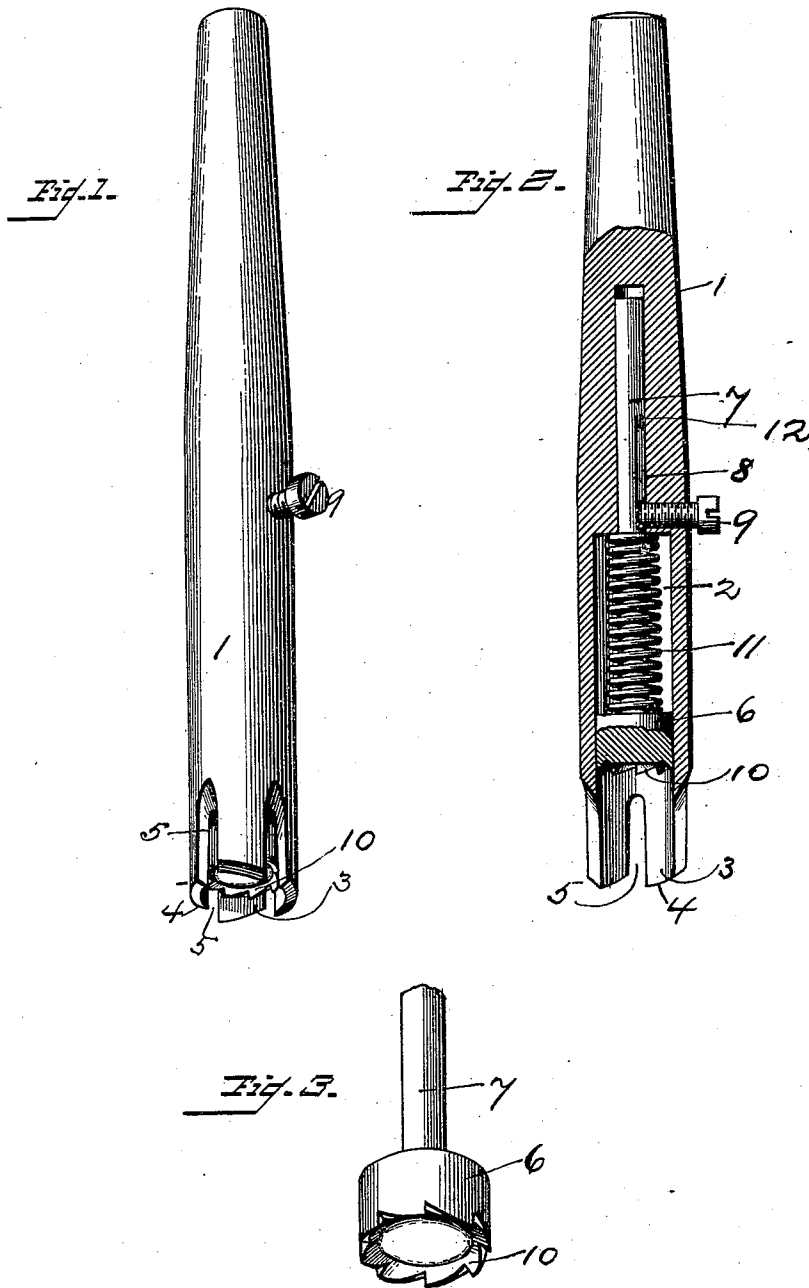


(No Model.)

U. H. LEFFEL.  
PLUG CUTTER.

No. 473,231.

Patented Apr. 19, 1892.



Witnesses  
*[Signature]*  
C. E. Jones.

Inventor  
U. H. Leffel  
By his Attorney  
*[Signature]*  
Chas. J. Gooch

# UNITED STATES PATENT OFFICE.

URIAH H. LEFFEL, OF TROY, OHIO.

## PLUG-CUTTER.

SPECIFICATION forming part of Letters Patent No. 473,231, dated April 19, 1892.

Application filed January 19, 1891. Serial No. 378,367. (No model.)

*To all whom it may concern:*

Be it known that I, URIA H. LEFFEL, a citizen of the United States, residing at Troy, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Plug-Cutters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-  
10 pertains to make and use the same.

This invention relates to a novel saw-bit, as hereinafter set forth, for cutting out and forming wooden plugs for buggy-bodies and other purposes.

15 In the accompanying drawings, Figure 1 represents a perspective view of my improved saw-bit. Fig. 2 represents a longitudinal section thereof, and Fig. 3 a detail view.

My novel plug-cutter is designed for cutting out from strips or blocks of wood of the requisite thickness and across the grain plugs or circular disks having at one end or face a circumferential bevel edge, said plugs being principally intended for use in connection  
25 with buggy and other vehicle bodies, though of course such plugs may be used in other connections.

The bit is composed of two main parts—viz., a stock 1, tubular for a portion of its length, as at 2, and having at its lower end a circumferential series of curved saw-teeth 3, having bevel-shaped edges 4, vertical spaces 5 being interposed between each pair of teeth 3 to admit of the passage of sawdust or shavings  
35 therethrough while the tool is in use, and a spring-plunger 6, having an upwardly-extending spindle 7, recessed or grooved for a portion of its length, as shown at 8, to receive a screw or pin 9, which is passed through a suitable transverse hole in the wall of the stock 1 for the purpose of retaining said plunger 6 within its stock 1 and guiding and limiting said plunger in its vertical reciprocal movements within the stock, and having at its  
45 lower end a circumferential series of saw-teeth 10.

In use the spiral spring 11 is placed upon and over the spindle 7 of the plunger 6, so as to encircle the same. This spring-encircled  
50 plunger 6 is then inserted within the bit-stock 1, with the recessed or grooved portion 8 therein opposite the screw-hole in the bit.

The screw 9 is then passed through the bit into registry with the recess or groove 8, whereupon the plunger will be by said screw 55 held in place within the bit with capability of free reciprocation therein for a predetermined extent, according to the depth of the bevel desired on the edges of the plugs, the shoulders 12 at the top and bottom of the recess or groove 8 limiting the extent of vertical reciprocation of the plunger. The plunger 6 is prevented from dropping out of the stock by the impingement against each other of the upper shoulder 12 and the inner end 65 of the screw 9, and, furthermore, said plunger is held from turning independently of the stock by the screw, as any tension or friction upon the plunger tending to rotate it independently of the rotation of the bit-stock 1 70 will cause the grooved or recessed portion 8 to bind against the screw, which will thereupon grip the plunger and hold it from independent rotation.

In use the bit-stock 1 is placed in position 75 upon or against and preferably across the grain of the piece of wood from which the plugs are to be cut and rotated, whereupon the teeth 3 will cut out of said piece or strip of wood a plug of the desired size. As the stock 80 is thus being rotated to cut through the wood and cut therefrom a plug the spring-encircled plunger is similarly rotated in unison with the rotary movement of the bit-stock, the consequence being that as the teeth 3 on the bit-stock are forming the circular plug the teeth 85 10 on the lower end of the plunger 6 are simultaneously forming a circumferential bevel around the edge of the plug adjacent to the plunger. 90

In the course of the formation of the plug that portion of its upper part upon which the bevel is formed enters the tubular lower portion of the bit-stock 1 and causes the plunger to become somewhat retracted within the bit, 95 the cushioning effect of the plunger-encircling spring 11, however, preventing the retraction of said plunger to too great an extent to prevent its operating to form the bevel.

When the plug has been cut out and the 100 bevel formed thereon, which, as before stated, are simultaneous operations, the bit is raised, and as the pressure on the lower end thereof and also on the lower end of the plunger is

thereby released the spring 11 will in seeking to resume its normal extended position of projection eject the now-formed plug from the bit.

- 5 Bits of the description herein described may be mounted either single or in gangs in any suitable framing and operated by any appropriate mechanism to secure their projection upon or contact with the work and  
10 their appropriate rotation and release from the wood under treatment at the proper times.

It is designed to construct the tool in its several portions of steel, though I do not confine myself to the employment of any particular metal in its construction. The respective  
15 teeth may be either left or right handed, as desired, and can, when dull, be readily sharpened or set after the manner that ordinary saw-teeth are sharpened and set.

- 20 Having thus described my invention, what I claim is—

1. A plug-cutter consisting of a tubular bit-stock having a toothed lower end, a spring-plunger adapted to fit and reciprocate within  
25 said bit-stock and having a toothed lower end and a longitudinally-recessed upwardly-extending spindle, and a screw extending through the bit-stock and engaging the recess in the plunger-spindle, substantially as  
30 and for the purpose set forth.

2. A plug-cutter consisting of a bit-stock having a central bore and a circumferential series of saw-teeth, a spring-encircled plunger having a recessed spindle with engaging  
35 shoulders and a circumferential series of saw-teeth and contained within and adapted to reciprocate within said bit-stock, and a screw extending transversely through the bit-stock, so as to engage said shoulders for the purpose  
40 of securing the plunger within the stock and limiting its vertical movement therein, substantially as set forth.

3. A plug-cutter consisting of a stock tubular for a portion of its length and having  
45 at its lower end a circumferential series of curved saw-teeth having beveled edges, and a plunger having an upwardly - extending spindle recessed or grooved for a portion of its length, and a screw or pin extending  
50 through the stock and engaging the recessed plunger for the purpose of guiding and limiting the same in its reciprocal movements within the stock, substantially as set forth.

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

URIAH H. LEFFEL.

Witnesses:

BELLE JAMESON,  
A. F. BROOMHALL.