

(No Model.)

W. H. DAVENPORT & J. W. DAY.

CUTTER HEAD FOR RIFLING MACHINES.

No. 315,130.

Patented Apr. 7, 1885.

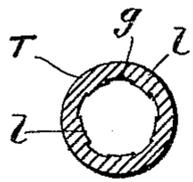
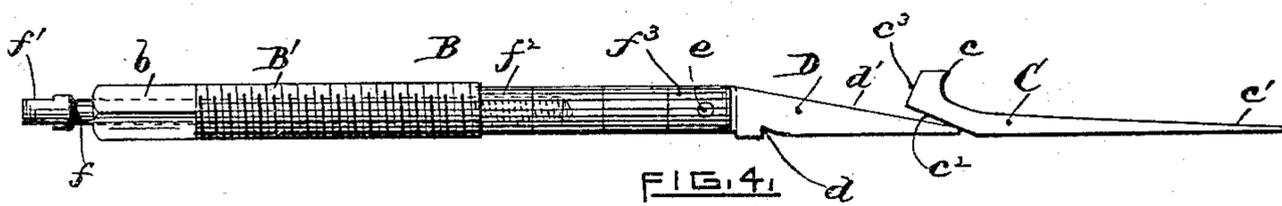
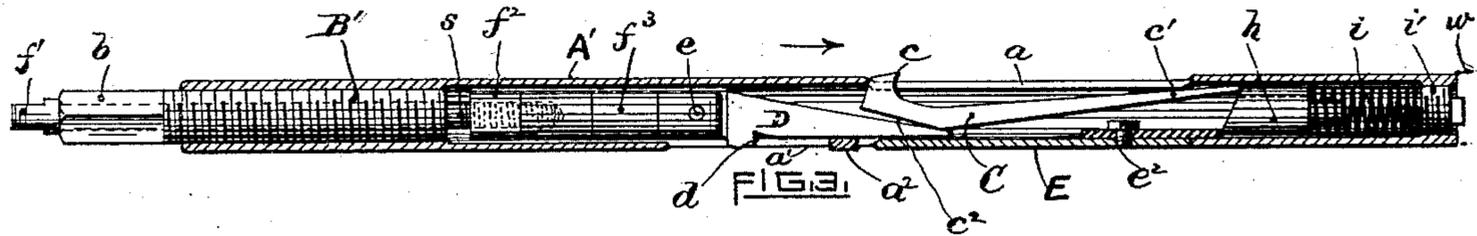
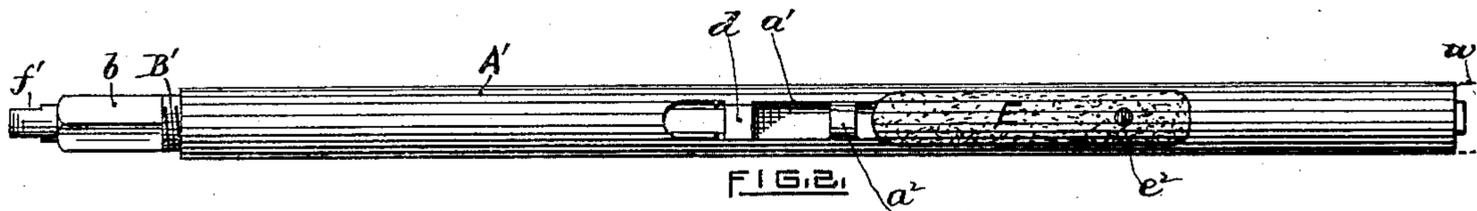
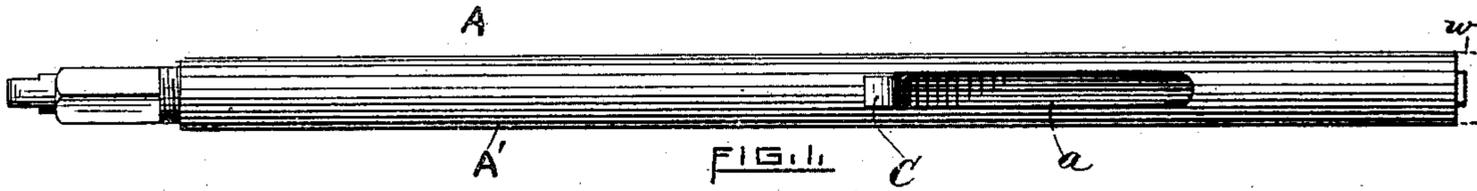


FIG. 5.

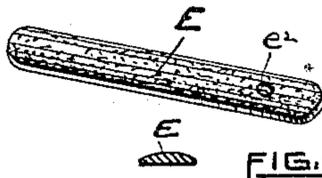


FIG. 6.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

WILLIAM H. DAVENPORT AND JOSEPH W. DAY, OF UXBRIDGE, MASS.

## CUTTER-HEAD FOR RIFLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 315,130, dated April 7, 1885.

Application filed August 22, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, WM. H. DAVENPORT and Jos. W. DAY, citizens of the United States, residing at Uxbridge, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Cutter-Heads for Rifling-Machines; and we 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Our invention relates to machines or tools used in rifling gun-barrels; and it consists, essentially, of a cutter-head of peculiar construction, in combination with a non-metallic shoe or gib made from rawhide or other analogous substance. Said shoe is removably secured to the shell of the cutter-head diametrically opposite to the cutter, the exterior surface of the shoe being adapted to bear against the bore or "land" surface of the gun-barrel while the latter is being rifled or grooved.

The object of our invention is to prevent scratches or other imperfections from being produced in the bore during the rifling process. This we are enabled to accomplish mainly by means of the rawhide shoe.

Heretofore, even with the exercise of great care and skill, imperfectly-grooved and scratched gun-barrels have caused a large percentage of loss to the manufacturer; and also when "leading" is resorted to to remove the scratches an additional expense is entailed. The leading, moreover, tends to round off the edges of the grooves corresponding to a proportionate wear in the gun-barrel.

In the accompanying sheet of drawings, Figure 1 represents a top view of the cutter-head complete, showing the cutter in position. Fig. 2 is a reverse or under side view of the same, showing the rawhide shoe, &c. Fig. 3 is a longitudinal central section through the shell, showing the relative position of the parts as in use, the gun-barrel, however, not being shown. Fig. 4 is a side view of the interior mechanism removed from the shell. Fig. 5 is

a cross-sectional view of a rifled barrel, and Fig. 6 represents views of the rawhide shoe detached.

The following is a detailed description of our invention, including the manner of its operation:

A, again referring to the drawings, designates the cutter-head complete, its plain cylindrical extension *w*, however, being omitted.

A' is the hollow metallic shell of the head, corresponding to the bore of the barrel, having an exterior longitudinal opening, *a*, and oppositely-formed opening *a'*. The rear end of the shell is provided with the sliding plug *h* and compression-spring *i*, the forward end of the shell being threaded and adapted to receive the hollow threaded sleeve B', the latter in turn having the spindle *f* passing through it, and secured to the enlarged extension *f*<sup>3</sup>. At *e* thereof is pivoted the wedge-shaped piece D, the forward end of which is adapted to engage with the cutter C at *e*<sup>2</sup>. (See Figs. 3 and 4.)

E designates the rawhide shoe or gib, which is let into the shell A' and secured therein by means of the screw *e*<sup>2</sup>. The outer surface of said shoe is turned or rounded off to correspond with the diameter of the shell or bore of the barrel.

*a*<sup>2</sup> is a tie uniting the opposite sides of the opening *a'*, said tie further serving to support the wedge D, thereby removing the weight or pressure of the latter from the rawhide shoe.

The parts composing the head are assembled and secured in position within the shell A', as shown in Fig. 3, wherein the cutting-edge *c* of the cutter projects through the opening *a* ready to take a cut or chip.

The other parts of the machine we do not deem essential to describe or illustrate, the same being no part of our present invention. However, to more clearly set forth its connection we would add the following description of its operation: A gun-barrel having been secured in position, an extension, *w*, (not fully shown, but equaling the length of the gun-barrel at least,) is attached to the cutter-head A and its opposite end secured to the spiral-former, the latter being suitably mounted and connected at the rear end of the rifling-machine, as common. The cutter-head is now

forced endwise through the barrel until it projects beyond the muzzle thereof. The end  $f'$ , now coming in contact with a suitable stop, forces the end of the wedge  $D$  under the cutter  $C$ , (see Fig. 3,) which brings the cutting-edge just above the surface or periphery of the shell  $A'$ . The cutter-head, now in turn being drawn through the barrel, (see arrow direction,) cuts a groove therein, the shoe  $E$  back of the cutter at the same time bearing against the land or bore. After this cut the attendant pushes back the wedge by means of a suitable tool engaging the notch  $d$ , which movement closes the space  $s$ , Fig. 3, and produces a corresponding space,  $f$ , Fig. 4, thus depressing the cutter. The head, now being again forced through the barrel and against the stop to close said space  $f$ , is again drawn back on its return-stroke, as before described, and so on successively until the desired depth of groove is formed. By means of a suitable index the barrel is adapted to be intermittently rotated, the rifled barrel then appearing as represented in cross-section, Fig. 5. It is obvious that any desired number of grooves may be cut.

It is found that when a portion of the shell itself is made to take the place of the rawhide shoe, the metal proves too rigid and inelastic, thereby causing "jumps" or depressions in the grooves, and in case a chip or shaving is accidentally caught between the land and the shell  $A'$  a "scratch" is the result. Practically all these defects are obviated by means of the shoe  $E$ , which is preferably made from rawhide, its properties being slightly elastic and oil-retentive, as well as being, for this purpose, more durable than steel.

It is obvious that various modifications of

the cutter-head may be employed in the rifling process, wherein the rawhide shoe or gib can be used. We however do not claim, broadly, the cutter-head  $A$ , minus the shoe  $E$  and tie  $a^2$ , as such have been used heretofore; but

What we do claim, and desire to secure by Letters Patent, is—

1. In a cutter-head for rifling gun-barrels, the shoe or gib herein described, made from rawhide or other analogous material, as and for the purpose set forth.

2. The combination, in a cutter-head provided with the cutter  $C$ , and means for adjusting and operating the same, of the rawhide shoe or gib  $E$ , constructed and arranged substantially as shown and set forth.

3. The cutter-head  $A$ , herein described, consisting of the shell  $A'$ , having the opening  $a$ , adapted to receive the cutter  $C$ , the oppositely-formed opening  $a'$ , connected by the tie  $a^2$ , and means, substantially as shown and described, for adjusting and operating the cutter, in combination with the rawhide shoe  $E$ , secured to the shell back of the cutter  $C$ , the whole constructed and arranged as and for the purpose set forth.

4. In a gun-barrel-rifling machine, the combination, with a cutter-head having a cutter and means for adjusting the same, of the rawhide shoe or gib detachably secured to said head opposite the cutter, substantially as and for the purpose herein set forth.

In testimony whereof we have affixed our signatures in presence of two witnesses.

WILLIAM H. DAVENPORT.

JOS. W. DAY.

Witnesses:

C. A. TAFT,

H. S. FARNUM.