A. B. EDMANDS.

Tools for Setting Eyelets.

No. 214,031. Patented April 8, 1879.

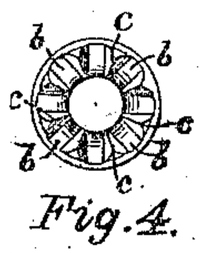
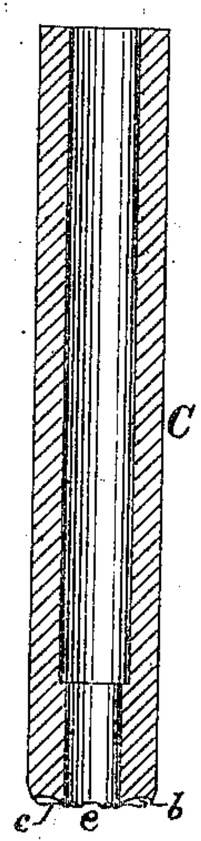


Fig. 4.



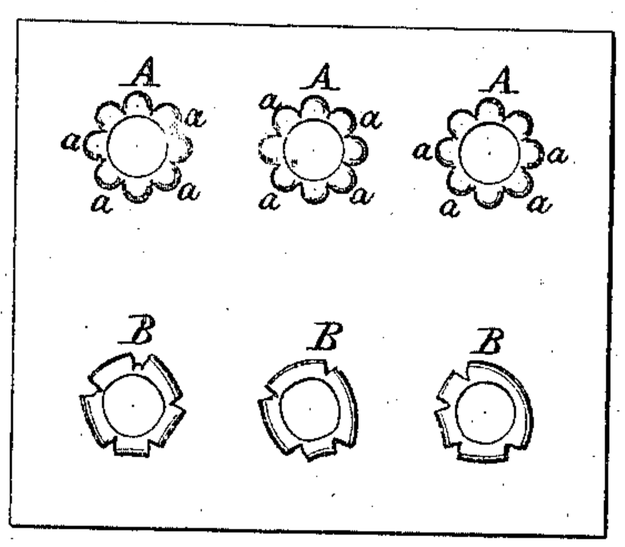
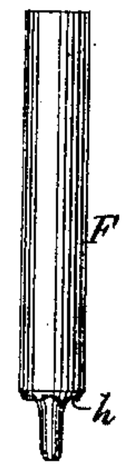
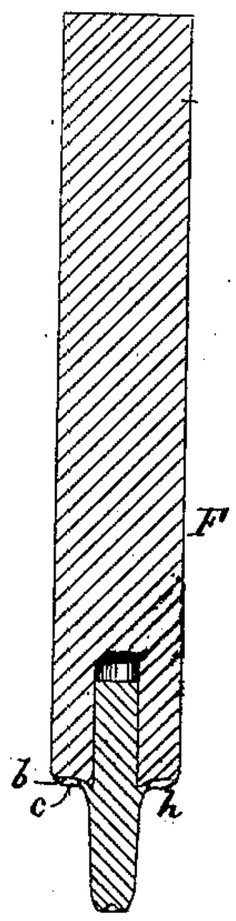


Fig. 1.





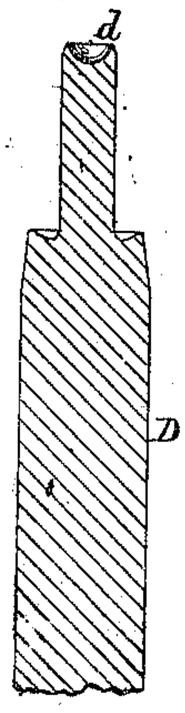


Fig. 3.

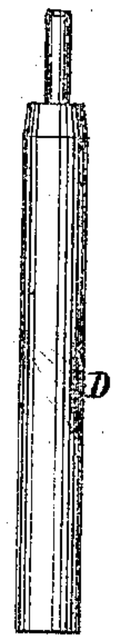


Fig. 2.

Fig. 5.

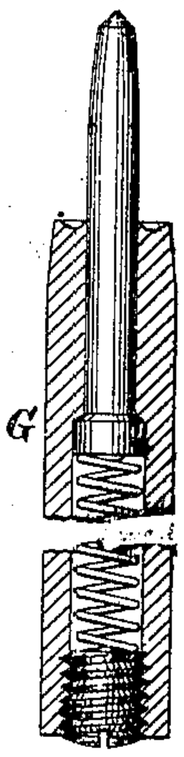


Fig. 6.

Witnesses:

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UNITED STATES PATENT OFFICE.

ARTEMAS B. EDMANDS, OF MILFORD, MASSACHUSETTS.

IMPROVEMENT IN TOOLS FOR SETTING EYELETS.

Specification forming part of Letters Patent No. 214,031, dated April 8, 1879; application filed November 16, 1878.

To all whom it may concern:

Be it known that I, ARTEMAS B. EDMANDS, of Milford, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Eyelet and Tubular-Rivet Setting Tools, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to improvements in tools for setting eyelets and tubular rivets in leather or other flexible material.

A portion of my present invention is an improvement upon the invention described in Letters Patent No. 124,346, granted to me March 5, 1872, and the other portions are equally applicable to all eyelet or tubular-rivet setting machines; and it consists in forming in the end or shoulder of the clinching die or anvil a series of radial grooves, each having a curved bottom of uniform width throughout and inclined sides, the inclined side of one groove meeting the inclined side of the next groove at an acute angle, so as to form a cutting knife-edge, each of which serves to split the end of the eyelet-tube as the setting-tools are brought together to clinch the eyelet, and at the same time the inclined sides of said groove serve to press inward upon the material the edges of the section of the eyelet-tube formed by two contiguous slits made by the cutting edges or knives, causing the outer surface of said section to assume a convex form, and thus remove all projecting sharp or ragged corners.

It further consists in forming a concave recess in the upper end of the punch or male die, of a diameter somewhat less than the diameter of said punch, that portion of the end of said punch outside of said concave recess being made beveling, so as to form an annular surface slightly conical or inclined downward and outward, to first come in contact with the leather and be pressed into it as the punch is moved upward, and thus prevent the punch from being sprung to one side and thrown out of line with the female die.

Figure 1 of the drawings represents a piece of leather, having set therein three eyelets set by my improved tools, and three eyelets set with the old or commonly-used tools. Fig. 2 is a side elevation of a pair of male and female dies adapted to punch the hole in the material, insert the eyelet, and clinch the same. Fig. 3 is a central longitudinal section of the same dies. Fig. 4 is an inverted plan of the female die. Fig. 5 is a side elevation of a pair of setting-tools adapted to insert the eyelet in a hole previously punched, and clinch the same by my improved tool; and Fig. 6 is a central longitudinal section of the same setting-tools.

In Fig. 1, A A A are eyelets set in a piece of leather by my improved tools, and B B B represent eyelets set by the old-style tools, or those now in common use, which tools, in the majority of cases, caused one or more breakages in the clinched end of the eyelet, as shown in the drawings. When such break occurs the ragged corners of the break are left exposed, and act injuriously upon other articles of clothing with which they come in contact, as in case of their application to various articles of wearing-apparel.

To obviate this objection, I split the end of the tube of the eyelet into a series of divisions, *a*, while in the act of setting the eyelet, and turn each of said divisions *a* over onto the material, and at the same time emboss or press inward upon the leather or other material their outer edges, so as to remove all projecting sharp or ragged corners, and produce an ornamental rosette-like finish upon the side of the material upon which the eyelet is clinched of uniform appearance.

To accomplish this, in connection with tools adapted to punch the material, I insert the eyelet and clinch the same at one operation, as described in the Letters Patent heretofore cited. I form in the working-face of the female die or clinching-anvil C a series of radial grooves, *b b*, having curved bottoms, each of uniform width throughout, and inclined sides, so arranged relative to each other that the inclined side of one groove meets the inclined side of a contiguous groove at an acute angle, thereby forming a knife-edge or cutter, *c c*, between each two contiguous grooves, which knife-edges first come in contact with the end of the eyelet-tube as it is forced up through the leather or other material and split it into a series of divisions, which are then turned

over by the curved bottoms of the grooves *b b b;* and the beveled sides of the grooves *b b*, acting in conjunction with said curved bottoms, press the outer edges of the leaves *a a* of the clinched flange into the material, so that the outer surface of each of said leaves are left convex.

The male punch or setting-tool D has in its end the concave recess *d*, the greatest diameter of which is somewhat less than the diameter of the punch, the surface of the end of said punch which is outside of said recess being inclined downward and outward from the margin of said recess, so that when said punch comes in contact with the leather to be punched it shall present a narrow annular surface to the leather, and by virtue of its form be embedded therein before the corners of the punch, working in conjunction with the cutting-edge *e* of the female die C, begin to cut the material, and thereby prevent the punch springing to one side or out of line with the female die, to the injury of said female die, as is liable to be the case in punching heavy greasy cowhide with the convex-ended punch described in my patent before cited.

F is a stationary clinching-tool, and G a movable plunger to work in connection therewith, and adapted to set eyelets in holes previously punched. These tools are essentially the same as those in common use in the majority of eyelet-setting machines now in use, except that the shoulder *h* of the tool F has formed in its face a series of radial grooves, *b b*, and cutting-edges *c c*, formed and adapted to operate substantially as shown in Fig. 4, and described in the reference to the female die or clinching-tool C.

The other details of construction of the tools F and G, (shown in Fig. 5) forming no part of my present invention, need no further description here.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The clinching-tool C or F, having formed in its working face or shoulder a series of radial grooves, *b b*, each having a curved bottom of uniform width throughout and inclined sides, and a series of cutting knife-edges, *c c*, all arranged and adapted to operate substantially as and for the purposes described.

2. In combination with the female die or clinching-tool C, the male punch or setting-tool D, provided with the concave recess *d*, and an inclined annular surface surrounding said recess, substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 14th day of November, A. D. 1878.

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