C. L. EATON.

EYELETING TOOL.

APPLICATION FILED JULY 6, 1903.

974,368.

Patented Nov. 1, 1910.

Fig. 1.

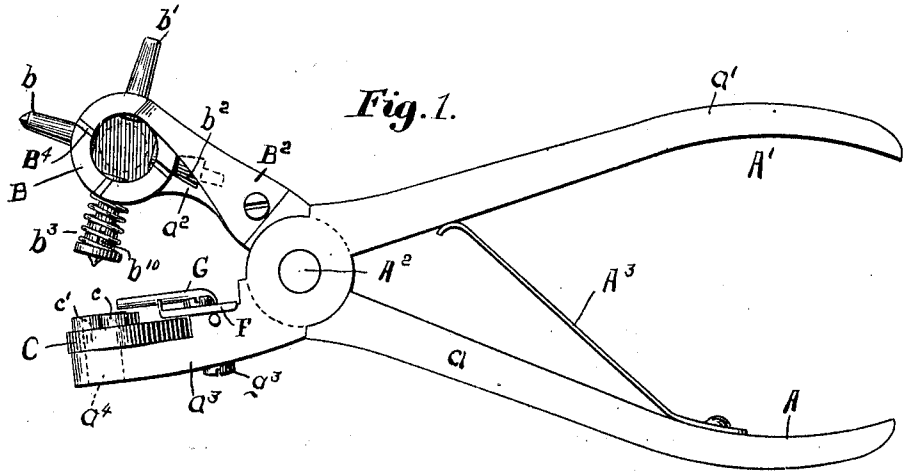


Fig. 2.

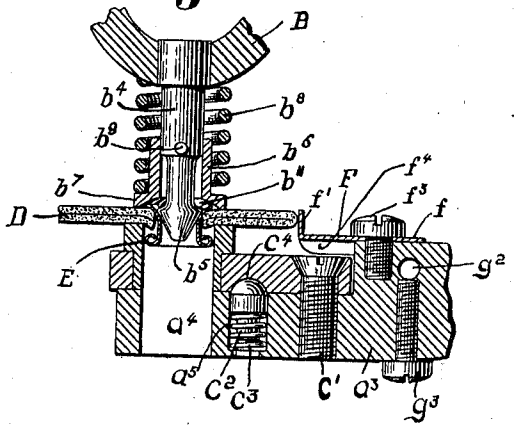


Fig. 3.

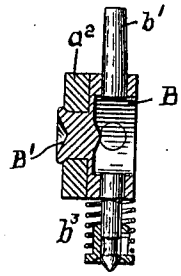


Fig. 4.

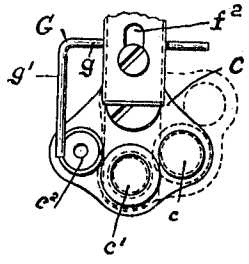
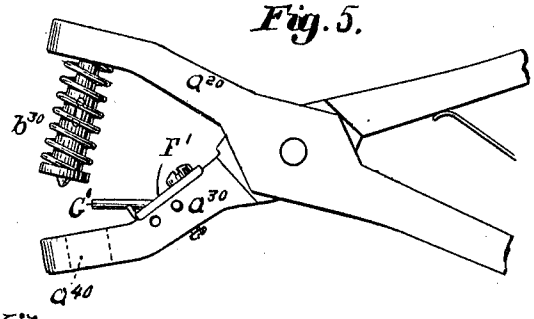


Fig. 5.



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UNITED STATES PATENT OFFICE.

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EYELETING-TOOL.

974,368. Specification of Letters Patent. **Patented Nov. 1, 1910.**

Application filed July 6, 1903. Serial No. 164,312.

To all whom it may concern:

Be it known that I, CLARENCE L. EATON, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Eyeleting-Tools; 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 appertains to make and use the same.

The present invention relates to eyeleting tools, and more particularly to that class thereof which is used in the manufacture and repair of boots and shoes.

Heretofore it has been customary to use several devices for marking the position of the eyelets on the shoe upper, punching the holes therefor and setting the eyelets. Moreover, in setting the enameled eyelets in use at present, it frequently happens that the enamel becomes cracked and broken, necessitating the removal of the eyelet and the substitution of a perfect one. The removal of an eyelet, without breaking or tearing the leather adjacent the hole, has been a difficult matter and one which has caused much vexation and expense.

The object of the present invention is to provide means whereby eyelets may be expeditiously removed without injuring the material in which they have been set.

A further object of the present invention consists in providing, in a single device, means for performing the several functions incident to setting eyelets in proper positions and removing them when necessary.

Further objects of the present invention will appear in connection with the following description.

The present invention is illustrated in the accompanying drawings in which:—

Figure 1 is a side elevation showing a tool adapted to mark the material, punch the holes, set the eyelets and remove the eyelets. Fig. 2 is an enlarged sectional view through the extracting plunger and anvil, showing an eyelet which is being removed from a piece of material. Fig. 3 is a cross section taken through the tool head, showing the means for pivoting the head to the holder and for securing the tools in the head. Fig. 4 is a fragmentary plan view showing the swinging anvil and the spacing bar and gage. Fig. 5 is a side elevation showing a tool holder provided with a single tool, namely, the eyelet extractor.

Similar reference characters will be employed to designate like parts throughout the specification and drawing.

The tool holder consists of two parts A and A^1 pivotally connected at A^2. The part A consists of a handle portion a and a jaw piece a^2 while the part A^1 consists of a handle a^1 and a jaw a^3. A spring A^3, arranged between the handles, normally maintains the jaws open.

A head B, of any preferred shape or form, is revolubly mounted near the outer end of the jaw a^2. As shown in the drawing, the head B is provided with a centrally disposed projecting hub B^1 which passes through an opening in the jaw piece and is riveted in place, but it is of course understood that any other desired mounting may be employed. The head B carries tool elements b, b^1, b^2 and b^3, arranged at intervals of ninety degrees along its periphery and projecting radially with relation to the axis thereof. A spring pawl B^2, secured to the jaw a^2, engages ratchet teeth or notches B^4 in the head and locks it in its several positions. The element b consists merely of a pointed stem and is adapted for marking the positions of the eyelet holes. The element b^1 consists of a tubular punch for cutting or punching the holes for the eyelets. The tool element b^2 is an ordinary eyelet setting device. The element b^3 is designed to extract eyelets after they have been set.

The marking, cutting or punching, and the setting tool elements are of the character now in use, and no detailed description thereof need be given. The extracting plunger consists of a shank b^4 provided with a cone-shaped head b^5. A sleeve b^6 is slidably mounted on the shank b^4, and is of a length somewhat shorter than said shank in order that it may have movement thereon. At the lower end of the sleeve there is a flange b^7 against which presses one end of the spring b^8, the other end of which spring is seated against the head B. The sleeve may be moved against the tension of the spring and this movement is limited by a pin b^9 carried by the stem b^4, and which projects into an elongated slot b^{10} in the sleeve. The lower face of the sleeve b^6 is

concaved so as not to engage with the eyelet operated upon. The operation of this arrangement will be described in connection with the anvil which coöperates with the extracting plunger. A plate C is mounted on the jaw a^3 so as to swing transversely thereof. This plate is provided with an anvil c preferably of brass, or some other comparatively soft metal, and an opening c^1 sufficiently large to permit the passage therethrough of an eyelet and a perforated seat c^2 for coöperating with the eyelet setting device b^2. These anvils, seats and openings are arranged with their centers at equal distances from the axis about which the plate C swings, and the openings are adapted to register with an opening a^4 in the jaw piece a^3. This plate may be swung so as to bring any one of the elements c, c^1 and c^2 below a coöperating element carried by the head B. In order to lock the plate in its adjusted positions I have provided a stud C^2 having a rounded upper end, said stud being pressed upwardly by means of a spring C^3. This stud and spring are arranged in a socket a^5 in the upper face of the jaw a^3. The plate C is provided on its under face with three seats C^4, adapted to engage with the rounded head of the stud in order to hold the plate in any one of its three different positions. The purpose of making the head of the stud inclined or rounded is to enable the operator to move the plate laterally against the tension of the spring, by applying considerable pressure, while at the same time, the plate is held with sufficient firmness to prevent its displacement under ordinary working conditions.

The operation of the parts heretofore described is as follows:—The plate C is moved so as to bring the anvil c into operative position and the head B is rotated until the marking tool b is brought into alinement with the anvil. By placing the material to be marked, on the anvil and pressing the handles a and a^1, an indentation is made on the material by the pointed tool b. After the marking is completed, the head B may be rotated ninety degrees, so as to bring the punch b^1 into place, punching the holes for the eyelets at the points previously marked by means of the marker b. In order that the eyelets may be inserted, the seat c^2 of the plate C is brought into alinement with the head, the head being rotated so as to bring the setting plunger b^2 into position. The eyelets are then set in the ordinary manner. If for any reason it is desired to remove an eyelet after it has been set, the plate C is swung so as to bring the opening c^1 into position, and the head B is rotated until the plunger b^3 is stationed above said opening.

In Fig. 2 I have shown the tool having between its jaws a piece of material D, containing an eyelet E, which is being removed by means of the extracting tool. The material D is so positioned, that, what may be termed the face of the eyelet, extends into the opening c^1 of the plate C, while the clenched portions are on the upper side. Upon pressing the handles a and a^1, the flange of the sleeve b^6 engages the material D, pressing it firmly against the plate C and holding it against displacement, the shank or stem continuing its movement into and through the material. The cone-shaped head b^5 is slightly greater in cross-section at its base than the cross-section of the opening in the eyelet, and, as the plunger moves downwardly, the head engages the wall of the eyelet and pushes the eyelet before it.

As shown in Fig. 2, the clenched portions of the eyelet are supported from below by the material D. As the plunger pushes the eyelet before it, therefore, the clenched portions must yield and straighten at the points where the bends occur. This is made possible for the reason that the eyelet is not engaged by the sleeve b^6. The eyelet is thus straightened and pushed bodily out of the supporting material and tool. In order to properly position the material in which the eyelets are to be placed, and to properly space the eyelets, I have arranged gages F and G, the one for determining the distance at which the eyelet shall be placed from the edge of the material and the other determining the space between two consecutive eyelets. The gage F consists of a plate f having an upturned flange f^1 at its forward edge and provided with a slot f^2 in the body thereof. A screw f^3, passing through this slot, engages the jaw a^3. It is seen that by loosening the screw the gage may be moved forwardly or rearwardly as is desired, whereupon, upon a subsequent tightening of the screw f^3, the gage is held in its adjusted position. The plate f is preferably provided with depending flanges f^4 which engage with the side faces of the jaw and serve to guide the gage and hold it against lateral displacement. The gage G consists of a wire g having one end bent at right angles thereto, as at g^1. The wire g passes through an opening g^2 in the jaw a^3, while the arm g^1 extends forwardly and parallel with said jaw. The distance between the arm g^1 and the center of the opening a^4 determines the space between two consecutive eyelets, and in order to render this gage adjustable, I have provided a set screw g^3 threaded through the jaw piece a^3 and engaging the wire g. This set screw serves to hold the gage in any position to which it may be adjusted. In using the gage G, the first mark is made and then the tool is moved until the center of this mark is in alinement with the arm g^1.

In Fig. 5 I have shown a single tool adapt-

ed for extracting eyelets, the part corresponding with the element b^3 in Fig. 1, being in this case connected directly to the jaw a^{20}, the intermediate head being unnecessary. Instead of the plate C in the compound tool, the opening a^{40} corresponding to the opening a^4 in Fig. 2, is sufficient. If desired, gages F^1 and G^1 similar to the gages F and G in the compound tool, may be employed.

It is thought that the operation of my improved tool has been made sufficiently plain in connection with the foregoing description and that little further discussion thereof is necessary. When, for instance, my invention is used in inserting eyelets in shoe uppers, the gage F is first positioned so that the eyelets will be set at the proper distances from the edge of the upper, and the gage G is adjusted so that the distances between the centers of the arm g^1 and the opening a^4 in the jaw, is equal to the distance between two consecutive eyelets. The upper is then marked, punched and provided with eyelets, in the manner previously described, and in case it is necessary to remove an eyelet for any reason whatever, this is rapidly and easily accomplished without injuring the upper in any way, leaving the opening in good condition, so that a new eyelet may be inserted.

While I have described my invention in detail, using for illustration a preferred form thereof, it is, of course, understood that it comprehends such variations in form and arrangement of parts as is commensurate with the scope of the claims.

Having described my invention, I claim as new and desire to protect by Letters Patent of the United States:

1. In an eyelet extracting implement, the combination with a tool member having a cone-shaped head to engage the clenched end of an eyelet and force the eyelet from the material in which it is set, of a yielding sleeve surrounding said tool member for clamping the material and holding the material against movement during the extracting operation, said sleeve being concaved to prevent engagement with the clenched end of the eyelet.

2. In an eyelet extracting implement, the combination with a tool member having a cone-shaped head and a cylindrical shank, of a sleeve surrounding said shank and being provided with a concave outwardly extending flange surrounding said cone-shaped head, together with a member having a surface coöperating with said concave flange for clamping the work before and during the extraction of an eyelet.

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

CLARENCE L. EATON.

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