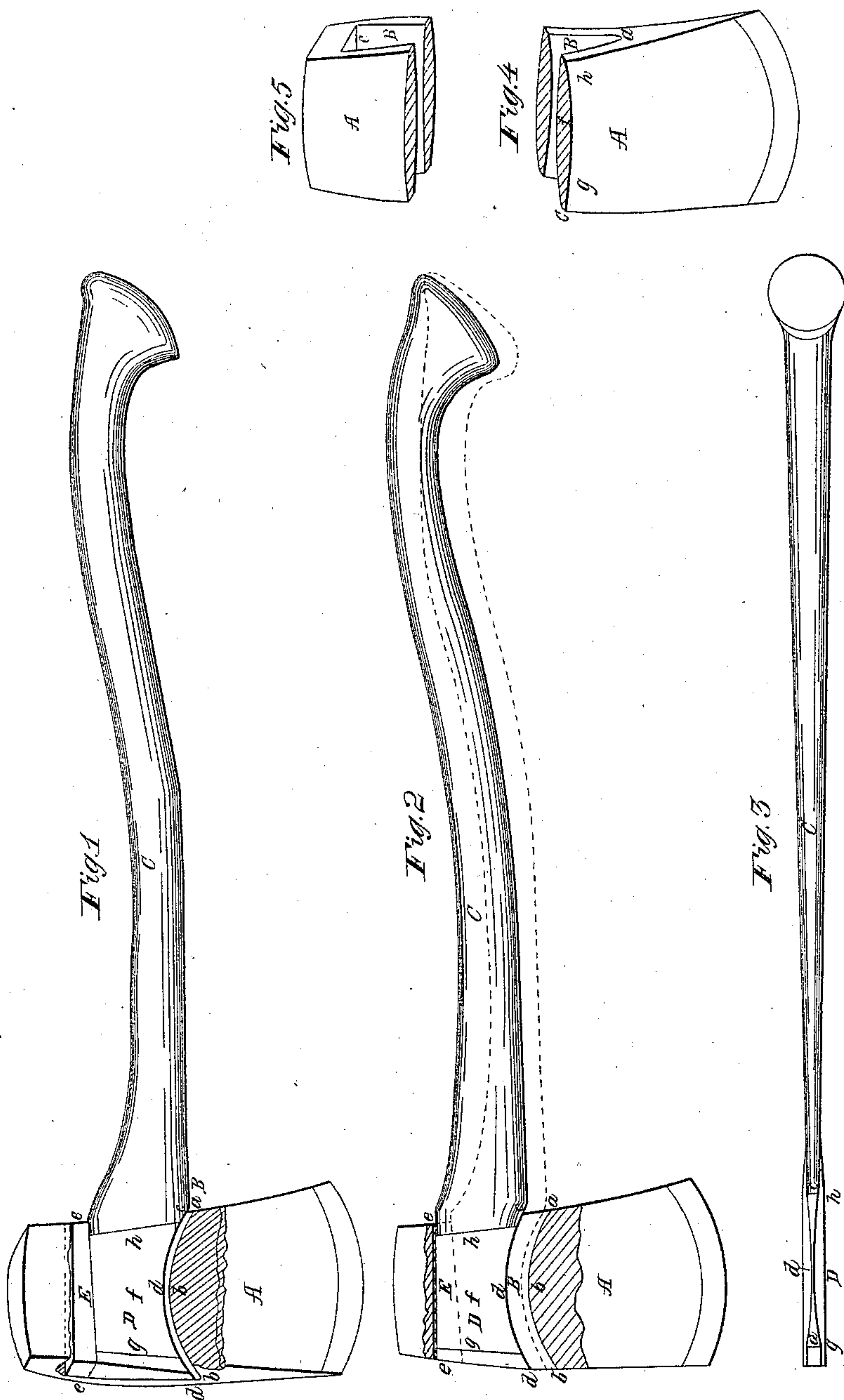


H. N. & J. C. Bill,

Axe Handle,

No. 11,350,

Patented July 25, 1854.



UNITED STATES PATENT OFFICE.

HORATIO N. BILL AND JEREMIAH C. BILL, OF WILLIMANTIC, CONNECTICUT.

METHOD OF SECURING HELVES IN AXES, &c.

Specification of Letters Patent No. 11,350, dated July 25, 1854.

To all whom it may concern:

Be it known that we, HORATIO N. BILL and JEREMIAH C. BILL, of Willimantic, in the county of Windham and State of Connecticut, have invented a new and useful Improvement in the Mode of Securing Helves in Axes, &c.; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a perspective view of an ax and helve made and connected together after our method, a portion of the metal forming the eye of the ax being broken away, to show more clearly the construction of the helve and the eye of the ax, also the manner in which the helve is fitted and secured in said eye. Fig. 2, is a side elevation of the same. The metal forming the eye is also broken away in a similar manner as in Fig. 1, and the helve is in the position it occupies when it is first inserted and before it is wedged in. The red lines show it in the position it occupies after it is wedged in. Fig. 3, is a view of the lower edge of the helve detached from the ax. Figs. 4 and 5 represent the ax, it being divided transversely through its eye. These views show plainly the peculiar construction or shape of the eye of the ax.

Similar letters of reference in each of the several figures indicate corresponding parts.

This invention relates to a new, simple, and very utile method of securing helves in axes, etc., whereby all possibility of an ax separating from its helve or being forced off the same, except the metal around the eye breaks away first, is avoided.

To enable others skilled in the art to make and use our invention, we will proceed to give a minute description of the same.

A, represents the ax. B, is the eye of the same.

C, is the helve.

The eye, B, and helve, C, it will be seen by examining the drawing, are made of a very peculiar shape, the bottom of the eye, or that nearest the cutting edge or bit, being made rounding and convex, as at *a*, *b*, *b*, Figs. 1 and 2, and the lower edge, or that part, D, of the helve which fits in the eye, is made concave and rounding at *c*, *d*, *d*, so as to correspond to the shape of the eye at *a*, *b*, *b*. The object of thus shaping the lower part of the eye and the lower edge of

the helve is to give the helve a greater bearing.

The eye, B, is made of a tapering or wedge shape, as shown in the drawing, its narrowest parts being at *a*, *f*, and its widest part at *e*. The helve, C, is made of a corresponding shape, but is not quite so wide as the eye at *e*, it being made narrower, so that it may be easily inserted, and then forced down to the bottom of the eye, and wedged tightly in the same, by a tapering key, E, in the manner shown in Fig. 1, in black, and in red in Fig. 2. By examining Figs. 4 and 5 it may be seen that the eye of the ax is made narrow near the center of its length, or that the inner sides of the walls of the eye are made convex, and nearly meet at *f*, and that the eye gradually enlarges from *f*, toward the top or butt and back and front edges of the ax, and decreases in width from *f*, between the points, *g*, and *h*, toward the lower or cutting edge of the ax. By examining Figs. 1, 2, and 3 it will also be seen that the part, D, of the helve is made concave from its upper to its lower edge and between the points, *g*, and *h*, and is made, in other respects, to suit the shape of the eye, B.

The operation is as follows: In inserting the helve, the upper edge of the part, D, is kept nearly in contact with the top of the eye, B, as shown in Fig. 2, in black, so that it may be inserted with greater ease. The helve being placed in the eye, as shown in Fig. 2, in black, it is forced down toward the bottom of the same, and made to occupy the position shown in Fig. 1, in black, and in red in Fig. 2. The tapering key, E, is then driven in, and the helve forced "home," as shown in red in Fig. 2 and in black in Fig. 1. When the helve is thus wedged in, the whole surface of the two sides of the part, D, bear against the metal of the ax, and the thickest portions of the helve stand below the point, *f*, and in front and behind the same, and owing to the eye being made tapering from said point down to the bottom of the eye and gradually enlarging from *f*, toward the front and back edges of the ax it may be evident that it will be impossible for the helve to be drawn out by force, except the metal around the eye breaks away first or the wedge be withdrawn. This method of securing the helve admits of the parts being made as strong as necessary and of their being easily put together and taken

apart, which is not the case with the present method.

We do not claim securing the helve in an ax by means of a wedge simply, but

5 What we do claim as our invention, and desire to secure by Letters Patent, is—

The peculiar shape of the eye B, of the ax, in combination with the helve and wedge,

E, substantially as and for the purpose herein described.

HORATIO N. BILL.
JEREMIAH C. BILL.

Witnesses:

J. R. ARNOLD,
CHAS. R. GAGER.