

No. 647,333.

Patented Apr. 10, 1900.

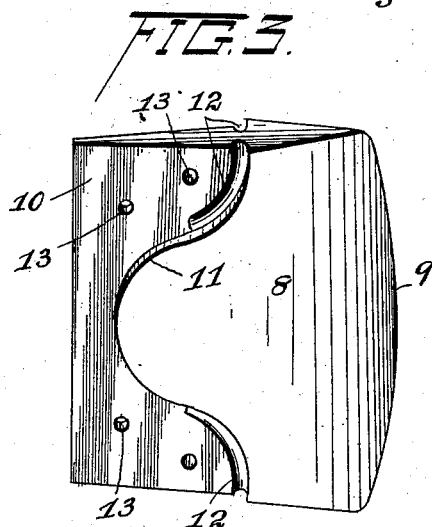
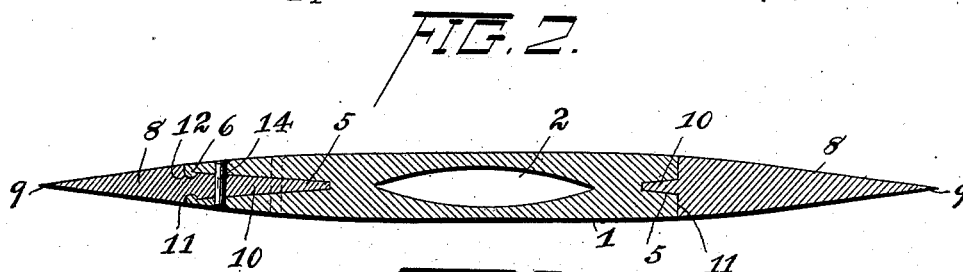
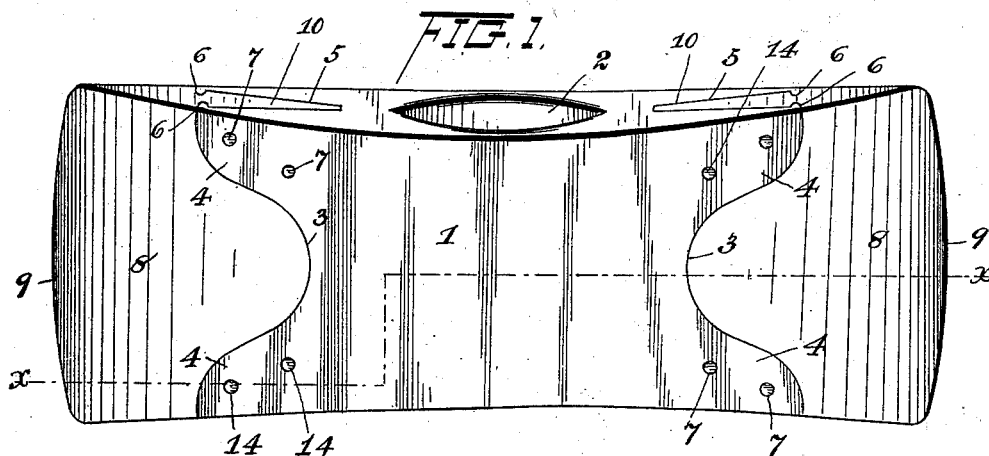
E. SHEPARD.

AX.

(Application filed Dec. 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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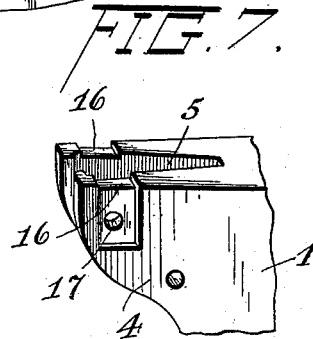
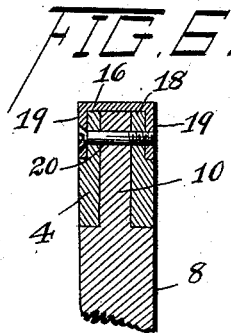
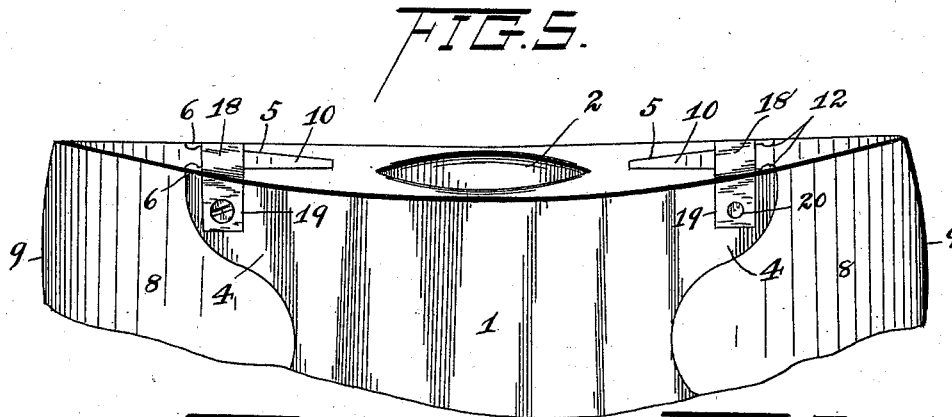
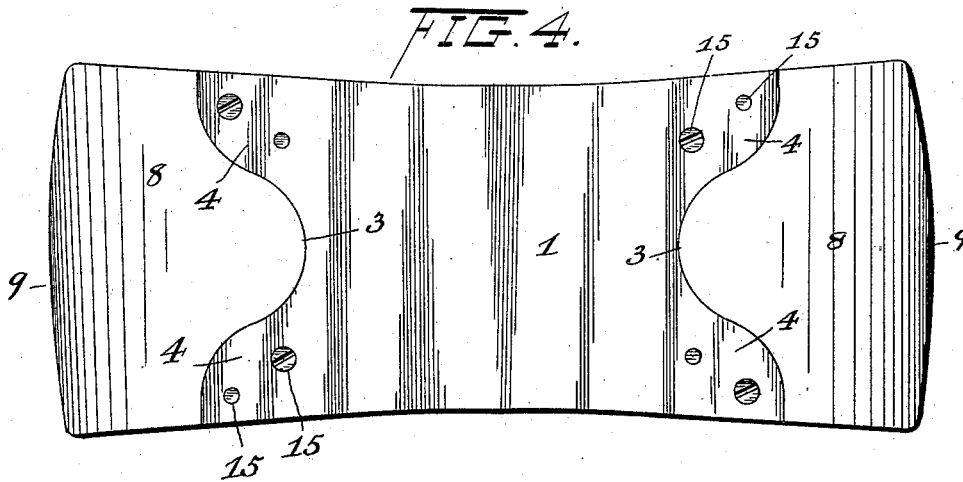
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2 Sheets—Sheet 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

EDWARD SHEPARD, OF WHITE SULPHUR SPRINGS, MONTANA.

AX.

SPECIFICATION forming part of Letters Patent No. 647,333, dated April 10, 1900.

Application filed December 23, 1899. Serial No. 741,419. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD SHEPARD, a citizen of the United States, residing at White Sulphur Springs, in the county of Meagher and State of Montana, have invented certain new and useful Improvements in Axes; 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.

This invention relates to axes; and it consists, essentially, of a poll having the usual eye and opposite compound-curved ends, with beveled recesses extending inwardly thereinto and converging toward the said eye, the depth of the recesses varying in accordance with the curvature of the ends, combined with removable bits having shoulders on opposite sides formed in outline to and adapted to fit against the said curved ends of the poll and also provided with extended beveled flanges to enter the beveled recesses, specific forms of means being employed to hold the bits in engagement with the opposite ends of the said poll.

The invention further consists of the details of construction and arrangement of parts, which will be hereinafter more fully described and claimed.

The object of the invention is to detachably unite the bit or bits and poll of axes, so that in case the said bit or bits become dull, worn out, or broken they can be removed and sharpened or new ones substituted without impairing the ax as an entirety.

In the accompanying drawings, Figure 1 is a perspective view of an ax embodying the invention. Fig. 2 is a section on the line  $xx$ , Fig. 1. Fig. 3 is a detail perspective view of one of the bits. Fig. 4 is an elevation of an ax, showing a modification in the mode of fastening the several parts. Fig. 5 is a detail perspective view of a portion of the ax, showing a still further modification. Fig. 6 is a transverse vertical section of the fastening shown by Fig. 5. Fig. 7 is a detail perspective view of a portion of one end of the ax-poll, showing a construction of recesses to receive the fastening illustrated by Figs. 5 and 6.

Referring to the drawings, wherein similar

numerals of reference are employed to indicate corresponding parts in the several views, the numeral 1 designates a poll having the customary eye 2 extending therethrough. The opposite ends of the poll 1 have central curved indentations 3 and opposite outwardly-curved portions to form side projections 4. The said opposite ends of the poll are formed with inwardly-extending recesses or slots 5, which are beveled and reduced toward their inner terminations, and the inner opposing portions of the projections 4 have short beads 6 formed thereon, which partake or conform to the curvature of said projections as far as the distance over which said beads extend. The walls formed at the inner ends of the recesses 5 are parallel with each other and with the axis of the eye 2, and said recesses are shallowest at their middle points by reason of the indentations 3. Thus a greater bearing-surface is established between the walls of the recesses 5 and the sides of the flanges 10 at the ends than at the center. Extending transversely through the said projections are openings 7 for the purpose of receiving the fastenings, which will be presently set forth.

To the opposite ends of the poll 1 bits 8 are removably connected and have outer cutting edges 9 and inner beveled flanges 10, which snugly fit the beveled recesses 5, and at their outer terminations or the points where their formation begins compound-curved shoulders 11 are constructed to fit against and form a flush joint with the indentations 3 and the projections 4 at the opposite ends of the poll 1. In opposite sides of the flanges 10 of each bit immediately adjacent the shoulders 11 curved recesses 12 are formed to receive the beads 6, said recesses being precisely as long as the beads. Openings 13 are also formed in the flanges 10 in line with the openings 7 in the opposite ends or projections 4 of the poll and, as shown by Figs. 1, 2, and 3, the form of fastening used will be that of a rivet 14, which is driven through the interlocked parts.

The beads 6 contract the entrances to the recesses 5, and the projections 4, being considerably thinner at their outer terminations, have a resiliency, and consequently when the bits are applied the flanges 10 gradually force

the said projections apart from each other until the beads are located over or in line with the recesses 12, when they will spring into the latter and form a very secure fastening, which holds the separable parts in engagement against ordinary means that may tend to release them. When the flanges 10 are fully driven into the recesses 5 and the beads 6 have become seated in the recesses 12, the openings 7 and 13 will be in alignment, and as a further safeguard against further detachment of the bits the rivets 14 are inserted in said openings and upset on one or both sides to flush with the outer surfaces. In removing the bits for the purpose of substituting others of a like nature or for sharpening the same the rivets 14 are punched out, and a sharp blow applied to the opposite edges of the bits springs the beads outwardly from the recesses 12.

Reliable resistance is offered to the shock or jar incident to the blow in chopping by the shoulders 11, bearing firmly against the opposite curved ends of the poll 1, which are of a corresponding thickness, and a flush joint is thereby established, so as to avoid interference with the penetration of the ax as an entirety. A firm unity of the bits with the poll is also produced by extending the flanges 10 in the bits in an unbroken plane on opposite sides to the greatest inward extent of the shoulders 11, which increases the purchase and renders breakage of the engaged parts less liable to occur, and by bevelling the said flanges and their recesses the cross-sectional strength of the bits at points which would otherwise be the weakest the material is increased and further wear is less liable to occur and loosening of the parts result, because the forceful impact on the cutting edges of the bits tends to jam the flange more firmly in the recesses.

In Fig. 4 the construction is similar to that shown in the preceding figures, with the exception that screws 15 are substituted for the rivets 14, said screws being reversely inserted, as shown, so that a part of the heads will be situated on one side and a portion on the opposite side. By this arrangement the said screws are less liable to work loose and will aid in maintaining a tight fitting of the bits with the poll.

In Figs. 5, 6, and 7 a further modification in the means of fastening the several parts is shown, and in this instance on the outer surfaces and adjacent edge portions of the projections 4 are recesses 16, formed therein, through which extend apertures 17. Fitted in the said recesses are angular ties 18, having apertured legs 19, through which and the opening 17 screws 20 are inserted, preferably in reverse positions. These angular ties are flushly fitted, and a portion of the recesses which form a seat therefor extend through the outer edges of the flanges 10, which come thereunder. This fastening is applied to parts of the members of the ax which are lia-

ble to spring open after long wear or in certain classes of lighter axes, where it is necessary to make the projections thinner, and consequently more sensitive.

The detachable fastening of the poll and bits not only results in a more positive connection than has heretofore been attained, but also facilitates the interchange of bits for different kinds of work or for the purpose of substituting similar bits, as heretofore noted, thereby increasing the life of the ax and rendering it more convenient and serviceable and also materially reducing the expense of such devices.

By making the several parts of the ax separately a different kind of material may be used in making the several parts—that is, the bits may be made of a higher and harder grade of metal and the poll of a softer and less-expensive grade. This variation in the material will of course be made to correspond with the expense of the ax.

Though a number of modifications have been shown and described, it is obviously apparent that changes in the proportions, dimensions, and minor details of construction might be made without in the least departing from the nature or spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is—

1. An ax having a recess extending inward from the extremity of the poll, and having the outer edge of the poll indented, and a bit having a flange at its inner end to enter the recess of the poll, and positive interlocking means between the terminal projecting parts of the poll separated by the indentation, and the sides of the flange of the bit, substantially as described.

2. An ax having a recess in the extremity of the poll, with its inner wall straight, and having the end of the poll indented, the projecting walls formed by the indentation having inner terminal extensions, and a bit having a flange to snugly fit within the recess of the poll, the end of the flange being straight to fit snug against the inner straight wall of said recess, and said bit having side shoulders at the base of the flange to abut against the end of the poll, and the flange having side depressions adjacent to the end portions of the shoulders to receive the inner terminal extensions aforesaid, substantially as described.

3. An ax having its poll formed with a tapering recess with its inner end straight, and having an indentation with the outer end of the poll, and having the extremities of the projecting walls separated by the indentation formed with inner extensions, and a bit having a tapering flange, with its outer end straight, and adapted to fit snugly within the recess of the poll, the sides of the poll and bit being flush and the bit having side shoulders at the base of the flange to abut against the end of the poll, and the flange having side re-

cesses in its end portions adjacent to the shoulders to receive the inner extensions of the aforesaid side wall projections, substantially as described.

- 5 4. An ax having the opposite ends of its poll indented centrally in curved lines and opposite side projections, beveled recesses being formed in the said ends and separating the projections, the inner opposing portions  
10 of said projections having beads thereon, and bits with extended beveled flanges and recesses in opposite portions of the outer edges

thereof to form seats for the said beads, curved shoulders being located at the outer terminations of said flanges to snugly abut against 15 and form a flush joint at the opposite ends of the poll, and fastening devices for the several parts.

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

EDWARD SHEPARD.

Witnesses:

BAKER W. BADGER,

CHARLES A. BENSON.