This invention relates to improvements in folding axes and like tools.

The primary object of the present invention is to provide an improved ax of this type having a folding handle assembly involving a main latch and a safety or auxiliary latch so arranged relative to the handle sections and to one another as to insure, first, that when the tool is unfolded for use the handle will be completely rigid and of sufficient strength to withstand heavy shocks incurred during use of the tool; and second, to insure that the handle will not accidentally collapse when the tool is in use.

Another object is to provide a tool as described which, though equipped with main and safety latches is capable of being quickly adjusted either to a folded or to a use position.

Still another object is to provide a tool as stated wherein the head or blade of the tool, when the tool is folded, is engaged in a recess of one of the handle sections, where it is protectively enclosed.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawings, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a side elevational view of the ax according to the present invention, partly broken away, in unfolded condition;

Figure 2 is a section on line 2—2 of Figure 1; and

Figure 3 is a view similar to Figure 1 in which the ax is folded.

The illustrated tool comprises a head or blade 10 to which is integrally or otherwise rigidly connected a first handle section 12. The handle section 12 is flat and straight from end to end thereof and has a closed longitudinal slot 14 adjacent to its inner end 13. The outer end of the slot 14 is in communication with a socket 16 which is disposed on the outer end of a compression coil spring 18 circumferentially disposed on a latch plunger shank having on its inner end laterally outwardly directed lugs 22, knurled or otherwise roughened at their outer ends to provide finger knobs or buttons for extracting the plunger latch toward the left in Figures 1 and 2 of the drawings against the resistance of the spring 18, whose inner end is engaged with the lugs 22.

A second handle section 24 has on its inner end 23 laterally spaced longitudinal arm 25. The inner end of the handle section 12 is engaged between the arms 25, as shown in Figure 2, and is pivotally connected to said arms by means of a pivot pin 26.

The arms 25 are formed in their free ends 27 with notches 28 arranged to receive the lugs 22 of the latch plunger of the first handle section 12, when the handle sections are aligned longitudinally in the unfolded condition of the ax shown in Figures 1 and 2.

The latch assembly of the first handle section 12 constitutes a safety or auxiliary latch for securing against accidental folding of the handle sections to their folded positions shown in Figure 3, while the tool is in use.

A main latch on the second handle section 24 comprises a flat-sided plunger 30 having a beveled inner end 32 for engagement in a correspondingly beveled notch 34 formed in the inner end 13 of the handle section 12. At its outer end the latch plunger 30 is integrally formed with laterally outwardly directed, roughened projections 36 comprising finger-engaging buttons to be used for retracting the plunger 30, that is shifting the same to the right in Figures 1 and 2, against the resistance of a compression coil spring 38 circumferenced about a reduced stem 40 formed on the outer end of the plunger 30 and compressed between the outer end of the plunger 30 and the outer end of a longitudinal slot 42 formed in and extending through the side plates 43 of the handle section 24. The buttons 36 work in the slot portions 45 of the slot 42. The spring 42 urges the plunger 30 to the left in Figure 2, to engage its beveled end 32 in the notch 34 so as to lock the handle sections in their unfolded bayonet conditions 35. When the handle sections are in the folded condition, the button 36 is shifted to the right in Figures 1 and 2, to disengage the plunger 30 from the notch 34.

The second handle section 24 comprises a pair of longitudinally contacting, oppositely but identically formed plates 43 disposed in side-by-side relation and coextensive in length, one of said plates 43 having thereon one of the arms 25 and the other plate 43 having the other fork arm 25. Connecting said plates 43 fixedly together at locations spaced longitudinally thereof are headed pins 44, 46 and 48. The plates 43 are laterally spaced from each other from the outer end 45 of the slot 42 to the inner end of the handle section 24 and thereby define the slot 42.

The laterally inward sides of the plates 43, outwardly of the slot 42, are formed with communicating, shallow recesses 50, cooperating to define a deep groove 53 receiving the blade 10 when the handle sections are in their folded relationship.

In this relationship of the handle sections, they are at an acute angle to one another, as shown in Figure 3.

The longitudinal edge 54 of the first handle section 12 is arranged to bear against the beveled end 32 of the latch plunger 30 in the folded condition of the ax, as shown in Figure 3, so that the handle section 12 is held by the plunger 30 in its folded position with the head 10 in the groove 53.

The inner end of the handle section 24 is rounded to provide cam surfaces 55 for engaging the latch plunger 22 to assure a smooth retraction of the plunger 22 as the sections move into their positions of longitudinal alignment.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. In a folding tool, first and second handle sections having inner and outer ends, said first handle section having a spring-pressed longitudinal auxiliary latch plunger having an inner end, lateral lugs on the inner end of said latch plunger, said inner end of said latch plunger being longitudinally spaced from the inner end of said first handle section, said second handle section having a longitudinal slot having a closed outer end located intermediate the ends of said second section and an inner end opening through the inner end of said second handle, said longitudinal slot being defined by laterally spaced plates ex-
tending from the closed end of the slot to the inner end of said second handle section, inner end portions of said plates constituting arms, and the part of the first handle section between the inner end of the auxiliary latch plunger and the inner end of said first section defining an inner end portion disposed between said arms, a pivot traversing said arms and said inner end portion and connecting the handle sections together for movement relative to each other from an aligned relation to a folded angulated relation, said arms having inner ends formed with notches arranged to be engaged by said lugs for the auxiliary latch plunger only in the aligned relation of the handle sections, a main longitudinal spring-pressed latch plunger positioned in the slot of the second handle section between said plates, said main plunger having laterally outwardly extending buttons and said plates having longitudinal slots receiving the buttons, said main plunger having a beveled inner end, and said inner end of the first handle section having a conformably beveled notch arranged to receive the beveled inner end of the main plunger only in the aligned relation of the handle sections.

2. In a folding tool, first and second handle sections having inner and outer ends, said first handle section having a spring-pressed longitudinal auxiliary latch plunger having an inner end, lateral lugs on the inner end of said latch plunger, said inner end of said latch plunger being longitudinally spaced from the inner end of said first handle section, said second handle section having a longitudinal slot having a closed outer end located intermediate the ends of said second section and an inner end opening through the inner end of said second handle, said longitudinal slot being defined by laterally spaced plates extending from the closed end of the slot to the inner end of said second handle section, inner end portions of said plates constituting arms, and the part of the first handle section between the inner end of the auxiliary latch plunger and the inner end of said first section defining an inner end portion disposed between said arms, a pivot traversing said arms and said inner end portion and connecting the handle sections together for movement relative to each other from an aligned relation to a folded angulated relation, said arms having inner ends formed with notches arranged to be engaged by said lugs for the auxiliary latch plunger only in the aligned relation of the handle sections, a main longitudinal spring-pressed latch plunger positioned in the slot of the second handle section between said plates, said main plunger having laterally outwardly extending buttons and said plates having longitudinal slots receiving the buttons, said main plunger having a beveled inner end, and said inner end of the first handle section having a conformably beveled notch arranged to receive the beveled inner end of the main plunger only in the aligned relation of the handle sections, said first handle section having a longitudinal edge arranged to conformably and retainably engage the beveled inner end of the main latch plunger in the angulated relation of the handle sections.

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