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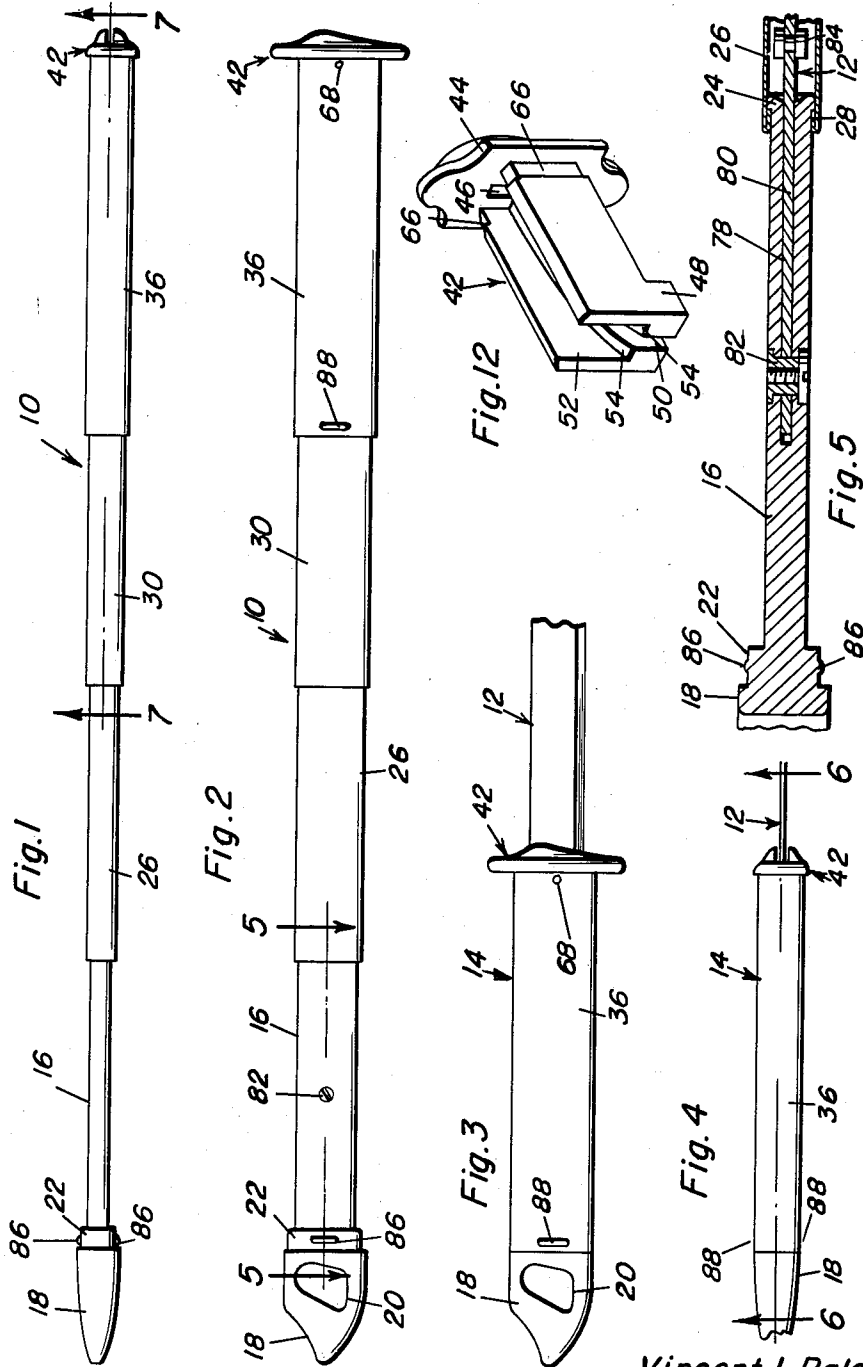
V. J. PALERMO

2,744,320

KNIFE

Filed May 19, 1953

2 Sheets-Sheet 1



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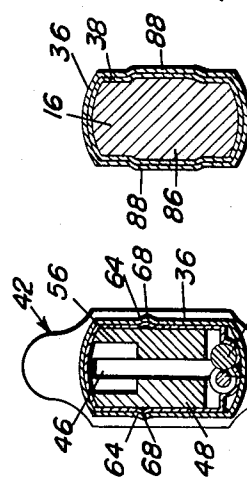
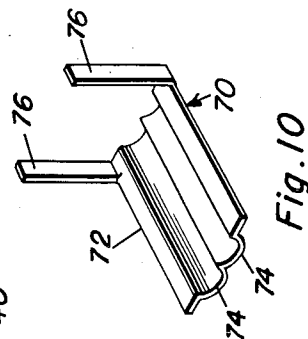
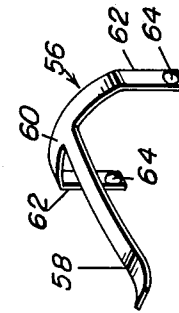
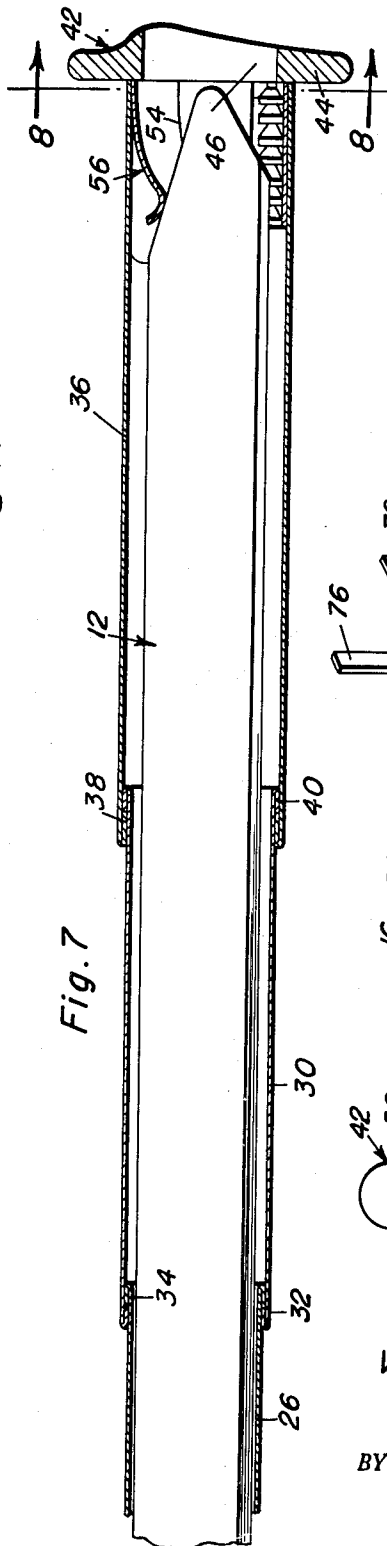
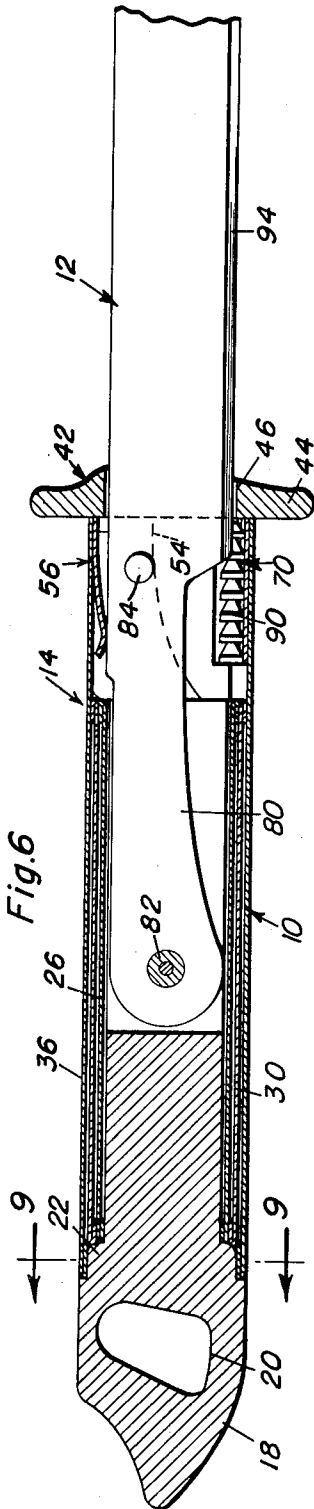
V. J. PALERMO

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Fig. 9

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KNIFE

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Application May 19, 1953, Serial No. 355,987

3 Claims. (Cl. 30—138)

This invention relates in general to improvements in knife constructions, and more specifically to a knife having an improved sheath.

The primary object of this invention is to provide a knife having a sheath firmly secured thereto, the sheath being selectively collapsible to permit the utilization of the knife.

Another object of this invention is to provide an improved knife construction which includes a knife blade having a combination sheath and handle, the sheath normally enclosing the knife blade and being collapsible to form a handle for the same.

Another object of this invention is to provide a collapsible knife sheath construction which is relatively compact and simple and formed of readily obtainable material so as to be economically feasible.

Another object of this invention is to provide an improved knife construction which includes a collapsible sheath normally enclosing a knife blade, the sheath having carried thereby a knife sharpener engaged with a cutting edge of the knife blade whereby the knife blade is automatically sharpened upon collapsing an extension of the sheath.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a top plan view of the knife which is the subject of this invention and shows the same with the sheath in the knife blade enclosing position;

Figure 2 is a side elevational view of the knife of Figure 1;

Figure 3 is a fragmentary side elevational view of the knife of Figure 1 and shows the same with the sheath in its collapsed position forming a handle of the knife;

Figure 4 is a fragmentary top plan view of the knife with the sheath in its collapsed state;

Figure 5 is an enlarged fragmentary sectional view taken substantially upon the plane indicated by the section line 5—5 of Figure 2 and shows the manner in which the knife blade is pivotally connected to a connecting member of the sheath;

Figure 6 is an enlarged fragmentary sectional view taken substantially upon the plane indicated by the section line 6—6 of Figure 4 and shows the relationship of the sheath with respect to the knife blade when the sheath is in its collapsed state;

Figure 7 is an enlarged fragmentary sectional view taken substantially upon the plane indicated by the section line 7—7 of Figure 1 and shows the relationship of a forward portion of the sheath with respect to a forward portion of the knife blade when the sheath is in its extended position;

Figure 8 is a transverse sectional view taken substantially upon the plane indicated by the section line 8—8 of Figure 7 and shows the relationship of broach sharp-

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ener elements carried by a forward section of the sheath with respect to a knife guide carried by the forward section of the sheath and supporting the broach sharpening elements;

Figure 9 is a transverse sectional view taken substantially upon the plane indicated by the section line 9—9 of Figure 6 and shows the relationship of the outermost sheath section with respect to the connecting member of the sheath;

Figure 10 is an enlarged perspective view of a bed for the broach sharpening elements;

Figure 11 is an enlarged perspective view of a spring clip carried by the knife guide for retaining the sheath in its extended position; and

Figure 12 is a rear perspective view of the knife guide.

Referring now to the drawings in detail, it will be seen that there is illustrated a knife which is the subject of this invention, the knife being referred to in general by the reference numeral 10. The knife 10 includes an elongated knife blade which is referred to in general by the reference numeral 12 and an elongated, collapsible combination sheath and handle for the knife blade, the sheath being referred to in general by the reference numeral 14.

The sheath 14 includes a rearmost connecting member 16 which has an enlarged rear portion 18 forming a handle. The rear portion 18 is provided with an opening 20 therethrough which is adapted to receive a chain or the like. Disposed immediately forward of the enlarged rear portion 18 is a shoulder portion 22 which is of a larger cross-section than the main portion of the connecting member 16 but of a lesser cross-section than the enlarged rear portion 18. The connecting member 16 also includes a shoulder portion 24 at the forward end thereof.

Telescoped over the connecting member 16 is an innermost tubular sheath section 26. The sheath section 26 is provided at its rear end with inwardly turned flanges 28 which engage behind the shoulder 24 and prevent movement of the sheath section 26 from the connecting member 16.

Telescoped over the sheath section 26 is an intermediate sheath section 30 which is provided at its rear end with inturned flanges 32. The inturned flanges 32 of the intermediate sheath section 30 engage outwardly turned flanges 34 at the forward end of the innermost sheath section 26.

Telescoped over the intermediate sheath section 30 is an outermost sheath section 36. The sheath section 36, like the sheath section 30 is provided at its rear end with inwardly turned flanges 38. The flanges 38 ride on the outer surface of the intermediate sheath section 30 and engage behind outwardly turned flanges 40 at the forward end of the intermediate sheath section 30.

Telescoped within the forward end of the outermost sheath section 36 is a knife blade guide which is referred to in general by the reference numeral 42. The knife blade guide 42 includes an enlarged guard 44 at the forward end thereof, the guard having a vertically extending, rectangular opening 46 therethrough. Carried at the rear side of the guard 44 and extending rearwardly therefrom is a generally rectangular cross-sectional extension 48 which is telescoped within the forward end of the outermost sheath section 36.

As is best illustrated in Figures 8 and 12, the extension 48 is provided with a vertical recess 50 which is in alignment with the opening 46. The recess 50 has communicating therewith an enlarged longitudinally extending recess 52, the recess 52 being a portion of and constituting an upper extension of the recess 50. The recess 52 terminates at its bottom in a pair of spaced arcuate cam

tracks 54 whose purpose will be set forth in more detail hereinafter.

Referring now to Figure 11 in particular, it will be seen that there is illustrated a spring clip which is referred to in general by the reference numeral 56. The spring clip 56 includes a longitudinally extending spring leg 58 which is secured to a bight portion 60 of an inverted U-shaped support. The U-shaped support also includes a pair of depending flanges 62 which are integral with the bight portion 60. The flanges 62 are provided adjacent their lower ends with outwardly projecting bosses 64 which are preferably punched from the metal of the flanges 62.

Referring now to Figures 5, 8 and 12 in particular, it will be seen that the portion of the extension 48 immediately adjacent the guard 44 is provided with a pair of vertically extending recesses 66. The recesses 66 are of a width to receive the flanges 62 and have the flanges disposed in the upper portion thereof, the spring leg 58 overlying the recess 50 in the extension 48.

As is best illustrated in Figure 8, when the spring clip 56 is mounted on the extension 48 of the knife guide 42, the bosses 64 thereof are seated in outwardly directed indentations 68 formed in the side walls of the outermost sheath section 36. In addition to a friction fit between the extension 48 and the outermost sheath section 36, the connection between the bosses 64 and the indentations 68 prevent accidental removal of the knife guide 42 from the outermost sheath section 36.

Referring now to Figure 10 in particular, it will be seen that there is illustrated a bed for broach sharpener elements, the bed being referred to in general by the reference numeral 70. The bed 70 includes a lower supporting member 72 which has formed therein a pair of longitudinally extending, generally semi-circular cross-sectional seats 74. Secured to the supporting member 72 at the forward end thereof and extending upwardly from the outer edges thereof is a pair of supporting legs 76.

When the bed 70 is properly positioned, the legs 76 are in vertical alignment with the flanges 62 of the spring clip 56 and are disposed in the vertical recesses 66 in the extension 48. The bed 70 is retained in position with respect to the extension 48 by the outermost sheath section 46 which is telescoped thereover in the manner best illustrated in Figure 8.

Referring now to Figures 5 and 6 in particular, it will be seen that the connecting member 16 is provided with a longitudinally extending vertical groove 78 therethrough. Seated in the groove 78 is a hilt portion 80 of the knife blade 12. The hilt portion 80 of the knife blade is pivotally connected to the connecting member 16 by a transverse separable fastener 82 which passes through aligned openings in both the hilt 80 and the connecting member 66.

Referring now to Figures 5 and 6 in particular, it will be seen that carried by the knife blade 12 at opposite sides thereof adjacent the hilt 80 thereof is a pair of transversely extending rollers 84. When the sheath 14 is in its collapsed state the roller 84 engages the trackways 54 of the extension 48 and causes a downward camming of the knife guide 42 to result in a binding connection between the knife blade 12 and the sheath 14.

In order that the sheath 14 may be further retained in a collapsed state, the shoulder 22 of the connecting member 16 is provided with a pair of vertically extending, outwardly directed bosses 86. When the sheath 14 is in a collapsed state, the flanges 38 of the outermost sheath section 36 is telescoped over the shoulder 22. The flanges 38 and associated portions of the sheath section 36 are provided with vertically extending, outwardly directed indentations 88. The bosses 86 are received in the indentations 88 to resist movement of the outermost sheath section 36 with respect to the connecting member 16. Furthermore, the extension 48 engages the forward end of the sheath sections 26 and 30 to prevent

forward movement of the same as is best illustrated in Figure 6.

Carried by the bed 70 is a pair of broach sharpening elements 90 and 92. The broach sharpening elements are substantially identical but face in opposite directions. It will be understood that the broach sharpening elements 90 and 92 are disposed in alignment with a cutting edge 94 of the knife blade 12 on opposite sides thereof, the cam tracks 54 arching away from the broach sharpening elements 90, 92 in the direction of extension of the sheath 14, and the spring leg 58 tending to yieldingly swing the knife 10 on the fastener 82 toward the broach sharpening elements 90, 92.

The described knife operates as follows. Assuming that the sheath 14 is fully collapsed, as shown in Figure 6, the cam tracks 50 are engaged with the rollers 84 and the knife blade 12 has been pivoted thereby, or swung, on the fastener 82, in opposition to the spring leg 58, in a direction to move its cutting edge away from and out of engagement with the broach sharpening elements 90, 92. Upon extension of the sheath 14, the outermost section 36 is first moved forwardly and carries with it the knife blade guide 42 and the broach sharpening elements 90, 92. Initial forward movement of said section 36 and guide 42 causes the cam tracks 54 to be moved forwardly of the rollers 84 and to disengage said rollers so that the spring leg 58 pivots the knife blade 12 on the fastener 82 in the opposite direction toward the broach sharpening elements 90, 92 to engage the cutting edge 94 of said blade 12 with said sharpening elements 90, 92, as shown in Figure 7, and maintain said edge so engaged during further extension of the sheath 14 and also during collapse of the sheath 14 until the section 36 has been moved rearwardly sufficiently to engage the cam tracks 54 with the rollers 84. Further movement of the outermost section 36 rearwardly will cause the cam tracks 54 to move the rollers 84 and knife blade 12 away from and out of engagement with the broach sharpening elements 90, 92 as the sheath 14 is fully collapsed.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A knife comprising a handle having a front extension, a knife blade projecting forwardly from said extension and having a cutting edge and a back edge, a tubular telescopic sheath for said knife blade including an inner section fixed on said extension and an outer section telescoping over the inner section for movement forwardly and rearwardly to sheath and expose said blade and having an open front end through which said blade extends when exposed, a blade sharpener fixed in the front end of said outer section and movable thereby along said cutting edge, said blade being pivoted at one end in said extension and swingable on its pivot toward and from said sharpener to engage its cutting edge with said sharpener and disengage said cutting edge from said sharpener, spring means attached in said front end of said outer section and bearing against the back edge of the knife blade to swing said blade towards said sharpener, and cam and roller devices, respectively, coengaging in response to rearward movement of said outer section to swing said knife blade away from said sharpener, one of said devices being mounted on said blade and the other of said devices being fixed in the front end of said outer section for movement therewith relative to the device mounted on said knife blade.

2. The combination of claim 1, the cam device comprising a slotted blade guide at the front end of said outer section with a pair of spaced cam tracks thereon

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in said outer section arching toward the front end of said outer section and away from said sharpener and between which said blade swings.

3. The combination of claim 2, said roller device comprising a pair of rollers mounted on opposite sides of the knife blade for riding said cam tracks. 5

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