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E. E. WEAVER

2,183,901

POCKETKNIFE

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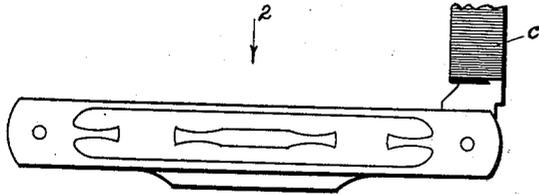


Fig. 1

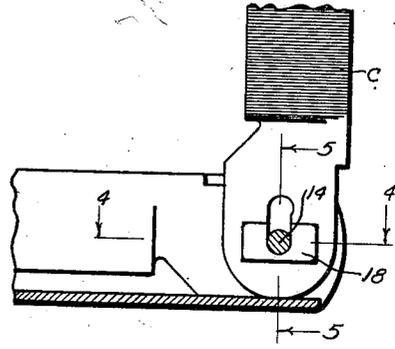


Fig. 3

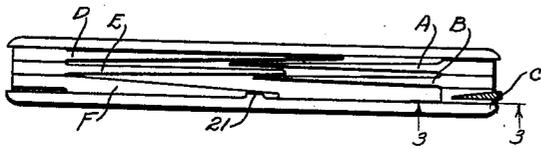


Fig. 2

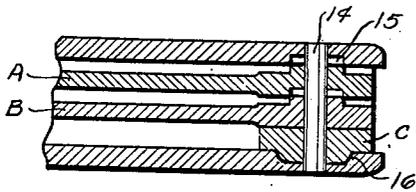


Fig. 6

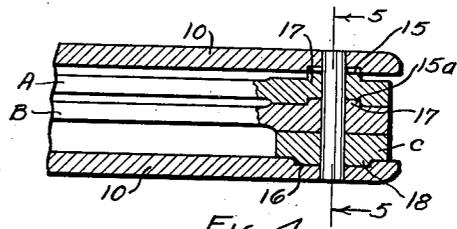


Fig. 4

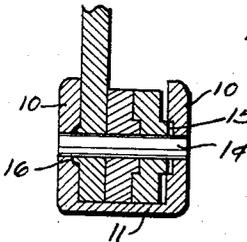


Fig. 5

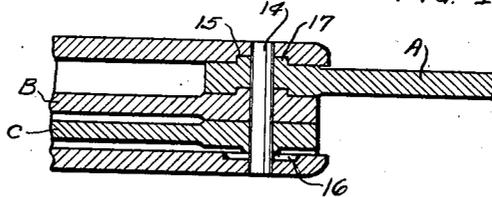


Fig. 7

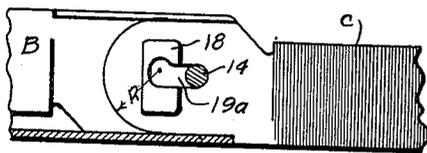


Fig. 10

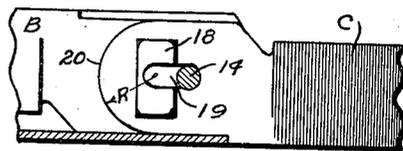


Fig. 8

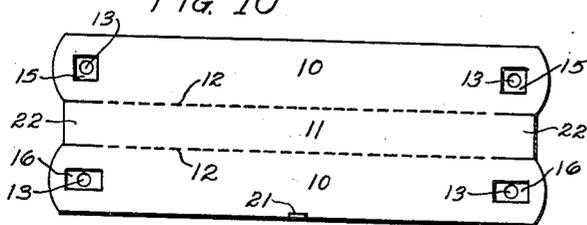


Fig. 9

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POCKET KNIFE

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Application March 2, 1939, Serial No. 259,328

4 Claims. (Cl. 30—161)

This invention relates to improvements in pocket knives and has reference more particularly to pocket knives which have two or more blades at one, or at each end of the handle.

5 Pocket knives as now ordinarily constructed are formed with handles having two separate side members secured to a spring that serves as means for spacing the sides and also for holding the blades in open and closed position. In such 10 knives the blades can be independently operated, but the blades are movable about their pivots at any time and will accidentally close, if sufficient force is applied.

15 It is an object of this invention to produce a pocket knife in which the blades are held in open and closed position without the aid of springs and in which, when the blades are in open or operative position, they are positively interlocked with the handle so that they will not 20 accidentally close, and in which the handle and the blades become, in effect, a rigid device that can be used in the manner of an ordinary sheath knife.

25 Another object is to form a knife of the type referred to in which one of the blades serves as a locking member by means of which the other blades can be released or interlocked with the handle.

30 A still further object of the invention is to provide a handle of such design that it can be made from a single piece of steel or other suitable metal and formed to the desired shape by dies, thereby simplifying the construction and making it possible to manufacture the handle at a 35 comparatively small cost.

The above and other objects that may become apparent as this description proceeds are attained by means of a construction and an arrangement of parts that will now be described 40 in detail, and for this purpose, reference will be had to the accompanying drawing in which the preferred embodiment of the invention has been illustrated, and in which:

45 Figure 1 is a side elevation of a pocket knife showing one blade in partially open position;

Figure 2 is a top plan view of the knife looking in the direction of arrow 2, Figure 1;

50 Figure 3 is a section taken on line 3—3, Figure 2, the parts being shown to twice the scale employed in Figures 1 and 2.

Figure 4 is a section taken on line 4—4, Figure 3, and shows the blades in unlocked or freely movable position;

55 Figure 5 is a section taken on line 5—5, Figures 3 and 4;

Figure 6 is a section similar to that shown in Figure 4, but illustrates a slightly modified form of the invention;

Figure 7 is a section similar to that shown in Figure 4, but shows the parts with one blade in 5 operative position and the parts locked to the handle;

Figure 8 is a view taken on line 3—3, Fig. 2, and shows the locking blade in operative position; 10

Figure 9 is a plan view of the handle blank before the same is bent into the ultimate U-shape; and

15 Figure 10 is a view similar to that shown in Figure 8 and shows a slightly modified form of the invention.

The basis of this knife is the handle which is formed from a single piece of steel or other suitable material, shaped as shown in Figure 9. The parts of the blank which forms the sides of 20 the handle have been designated by reference numeral 10, and that portion which forms the back of the handle has been designated by reference numeral 11. The blank is bent along dotted lines 12, into the shape shown in Figure 5. 25 Before the handle is bent into its ultimate shape, openings 13 are provided for the reception of the pivot pins 14. One of the parts 10 is provided with depressed areas 15 that surround the openings 13. The depressed areas 15 are preferably square and the center of the openings 13 30 are positioned at the intersection of the diagonals of these square depressions. Surrounding the openings 13 in the other side portion of the handle are rectangular areas 16, which are elongated in the direction of the length of the 35 handle. These depressed areas are preferably of the shape shown, but may be of other shapes and may even comprise separate depressions on opposite sides of the openings. For the purpose of 40 this explanation, the depressed area will be considered as being rectangular and arranged in the manner shown in Figure 9. After the handle has been bent along the dotted lines 12, into the 45 shape shown in Figure 5, blades are positioned between the sides at each end thereof and held in place by pivots 14.

The construction of the blades will now be described. In the embodiment shown three 50 blades have been positioned at each end of the handle, and these have been designated by letters A, B, C, D, E, and F. Since the construction of the blades and the interlocking means that forms the subject of this invention are the same for both ends of the handle, the description 55

will be limited to the blades positioned at the right and designated by letters A, B and C. The blades A and B may be of any desired shape and size, but in the embodiment illustrated, blade C is intended to represent a nail file, although it does not have to have this characteristic.

Referring now more particularly to Figure 4, it will be seen that blade A is provided on the side adjacent the inner surface of the side member 10 with a raised area 17 which is of the proper size and height to fit the depression 15. Since the depressed area 15 is square, the raised portion 17 is also square and the dimensions of the two are such that the raised area can be inserted into the depression in each of three separate positions. The opposite side of blade A is provided with a depression 15a which serves to receive the raised area 17 on blade B. Where three blades only are used at each end, the other side of blade B can be flat as shown in Figure 4, or it may be provided with a depressed area similar to area 15a if desired, but where three blades only are employed, this depressed area would have no function. The nail file or blade C has a smooth surface engaging the adjacent smooth surface of blade B and is provided on the side that faces the side 19 of the handle, with a raised rectangular area 13 which is of the same size and shape as the depressed areas 16 in the handle.

It will be observed from an inspection of Figure 3 that the raised area 18 of blade C extends transversely of the length of the blade and since the depressed areas 16 on the handle extend longitudinally of the latter, it is evident that the raised area 18 will enter the depressed area only when the blade is in the position shown in Figure 3. At other positions of blade C, the raised area 18 will contact the inner surface of the side of the handle in the manner shown in Figure 7. The edges of the raised portion 18 and also the walls of the depressed area 16 are preferably inclined so as to permit the raised portion to move out of the depressed area whenever the blades are moved from the position shown in Figure 3.

In the embodiment illustrated in Figures 4, 5 and 7, the depth of the depressed area 16 is supposed to be the same as the depth of the depressed area 15 and therefore when the parts are in the position shown in Figure 4, the two blades A and B must be interlocked in order to release blade A from the depressed area 15 of the handle. After the blade A has been moved to operative position, the raised portion 17 thereof is moved into the depressed area, thereby releasing blade B, which can be returned to closed position after which the parts are locked by means of the blade C, which is moved to the position shown in Figure 7.

This construction is not well suited to knives having more than two blades at each end and when three blades are employed, the preferable construction requires that the depressed area 16 shall have a depth equal to twice the depth of the depressed area 15 in the manner shown in Figure 6. With this construction, the two blades A and B are both released when blade C is in the position shown in Figure 3. This makes it possible to open either one of blades A and B as the lost motion between the parts is sufficient to release blade A from the handle and to release blades A and B from each other. This makes it possible to select either of the blades and move it to open or to closed position.

Referring again to Figure 4, attention is called to the fact that if blade B is to be opened in-

stead of blade A, the latter can be moved into such a position that its projection 17 enters the depressed area 15, whereupon the interconnection between blades A and B is broken and blade B can be moved independently of blade A. It is therefore possible to employ either construction shown in Figures 4 and 6.

When blade C is to be used, it is necessary to provide some other means of holding it in operative position, because when it is in the position shown in Figure 8, the raised area 18 extends transversely of the depressed area 16. To hold this blade in open position it has been provided with an elongated opening 19 through which the pivot pin 14 extends and the end 20 of the blade is curved on the arc of a circle whose radius has been indicated by R, the center of curvature being the center of the pivot pin when the parts are in the position shown in Figure 3. After the blade has been opened and pushed inwardly into the position shown in Figure 8, it will be rigidly held in this position until withdrawn to a position in which the pivot pin engages the other end of the opening 19.

One side of the handle is provided with an inwardly projecting lug 21 that serves as a friction lock for holding the locking blades in closed position. The blade designated by letter F is supposed to be a punch and in actual construction the blades F and C are so constructed that blade C is interlocked with the handle through the action of blade F, but this has not been shown in detail because it is not an essential part of the invention.

In Figure 10 a slightly modified form of the invention has been shown. In this modification blade C has been provided with a slot 19a that is curved at one end in the manner shown. When the blade is closed or partly open the pivot 14 is positioned in the offset part which forms the center for the curved end. When the blade is open, it is pushed inwardly and is wedged against the back 11 and cannot rotate in either direction until it is pulled out so as to bring the pivot to the offset end. All of the blades may be made as shown in Figure 10 in which case the depressed areas 15 and the projections 17 may be dispensed with.

In the drawing depressions 15 and the corresponding projections 17 have been shown as substantially square. Since blades A, B and D, E are to be locked in fully open and fully closed positions, it is evident that the depressions 15 and corresponding projections may be elongated in the same manner as 16 and 18. It is also evident that a plurality of elongated depressions, one or more on each side of the pivot 14 can be used as pointed out in connection with depressions 16. It is therefore to be understood that when non-circular depressed areas are mentioned the expression is intended to cover all mechanical equivalents, namely, depressions and projections that interlock when the blades are fully open, but do not interlock when they are partly open or partly closed. It is evident that a large number of specifically different shapes and arrangements of depressions and projections can be used and that it would be impractical to illustrate and describe them all.

Although springs are not necessary in this construction, it may be desirable for the convenience of manufacture that the handle blank be provided with short tongues 22 at each end which makes it possible to obtain a slight movement of this portion of the handle during manufacture.

From a theoretical consideration, however, these tongues are not necessary.

From the above it will be seen that a construction of pocket knife has been produced which makes it possible to positively interlock either one of a number of blades with the handle, when in operative position, without the use of springs, and in which the handle can be made from a single piece of metal formed by suitable dies into the desired shape. Such knives can be manufactured at a less cost than the ordinary knives and have many advantages in actual use. With this type of knife the blades will not accidentally close and this is a valuable consideration as the ordinary pocket knife has often been known to fold up in emergencies.

Having described the invention what is claimed as new is:

1. A pocket knife comprising, in combination, a handle having two interconnected spaced sides, a pivot connecting the sides adjacent one end thereof, a plurality of blades operatively attached to the pivot, the sides having non-circular depressed areas adjacent the pivot, the blades adjacent the sides having each a raised area of substantially the same size and shape as the depression in the adjacent side, the thickness of the blades plus the height of the raised areas of the blades adjacent the sides being greater than the distance between the opposed surfaces of the sides of the handle, and the thickness of the blades plus the height of one of the raised areas being less than the distance between the sides of the handle whereby one of the raised areas must be positioned in a recess of the handle before any of the blades can be turned on the pivot.

2. A pocket knife comprising, in combination, a handle having two interconnected spaced sides, a pivot connecting the sides adjacent one end thereof, a plurality of blades operatively attached to the pivot, the sides having a rectangular depressed area, in each side, adjacent the pivot, the area on one side being longer than it is wide, a plurality of blades movably attached to the pivot, the blades adjacent each side having a raised area of the same shape, size and depth as the corresponding depressed area, the raised area on the blade adjacent the side having the elongated recess, being so positioned relatively to the depressed area that it will enter the latter only when the blade is in a position intermediate fully open and fully closed, the relationship between the depressed area and the raised area on the other side being such that the raised areas enter the depressed areas when the blade is in open and in closed position, the combined thick-

ness of the blades plus the combined thickness of the raised portions being greater than the distance between the sides and the combined thickness of the blades plus the height of the raised portion on the blade on the opposite side from the blade having the elongated raised area, being less than the distance between the sides and the thickness of the blades plus the raised portions on the blades being greater than the distance between the sides of the handle.

3. A pocket knife comprising, in combination, a handle having two spaced parallel sides interconnected along one edge, pivot pins connecting the sides adjacent the ends, a plurality of blades movably connected to each pivot, the opposing surfaces of the sides having depressed areas adjacent the pivots, the blades adjacent the sides having raised areas corresponding in size, shape and position to the depressed areas and adapted to enter the latter in predetermined positions of the blades, the raised areas on one blade registering with the corresponding depressed area when the blade is in fully open and fully closed position, the raised area on the blade adjacent the other side registering with the corresponding depressed area when in a position intermediate fully open and fully closed position, the combined thickness of the blades plus the combined height of the raised portions being greater than the distance between the sides of the handle and the combined thickness of the blades plus the height of one of the raised areas being slightly less than the distance between the sides whereby the raised area on one of the blades adjacent a side of the handle must be positioned in the adjacent recess in the handle in order to permit the blade adjacent the other side of the handle to be turned about the pivot.

4. A pocket knife comprising in combination, a handle having two spaced, parallel sides connected along one edge, a pivot pin extending across the space between the sides near one end, the connecting portion of the handle extending beyond the pivot, a blade provided with an elongated opening adjacent one end, for the reception of the pivot, the end of the blade adjacent the opening being curved about a radius substantially equal to the distance from the center of the pivot to the adjacent surface of the connecting portion, the corresponding end of the opening being spaced from the end of the blade a distance equal to the radius minus one-half of the diameter of the pivot, whereby the blade can first be rotated about the pivot and then moved longitudinally after it has been moved to fully open position.

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