This invention relates to improvements in pocket knives and has special reference to pocket knives having blades arranged and adapted to be moved endwise into and out of the knife casing or handle.

A special object of the invention is to provide a knife of the character mentioned in combination with a mechanical lead pencil, or a fountain pen, the two in each instance having a common case and the lead operating mechanism or pen part occupying one end of the case and the knife device occupying the other end of the case.

A further object of the invention is to provide a pocket-knife of the kind disclosed in the U. S. Patent Number 1,853,672, issued April 12, 1902 to Alcidas Dodson, and improved, changed and modified to adapt it to the provision of the combinations mentioned.

A feature of importance of the invention comprises a novel knife structure by which the knife and case can be readily assembled for use without the necessity of providing any enlargements of the blade operating slot in the outer covering or outer shell of the handle or case.

Further beneficial features and improvements of importance will become clear from the following description and appended claims taken in conjunction with the accompanying drawings, forming part of this specification and in which there is disclosed a preferred form of the invention. It should be understood that such portrayed form is typical merely of the principle of the invention and should not limit the protection accruing through this application except within the scope of said claims.

In said drawings:

Fig. 1 is a side view of a combination pocket knife and pencil embodying the invention in one form, the knife blade being in extended position;

Fig. 2 is a view similar to Fig. 1, showing the knife combined with a fountain pen;

Fig. 3 is a side view of the tubular casing of the combined pencil and knife devices the outer casing being removed;

Fig. 4 is an enlarged, fragmentary, central, longitudinal sectional view taken on the line 4—4 of Fig. 1, the knife blade being shown in extended position in full lines and in withdrawn position in dotted lines;

Fig. 5 is a sectional view on the line 5—5 of Fig. 4, the knife blade being shown withdrawn into the case;

Fig. 6 is an enlarged fragmentary side view of the end of the tubular case through which the knife blade is projected for use;

Figs. 7, 8 and 9 are enlarged, transverse sectional views on the lines 1—1, 2—2 and 3—3 respectively of Fig. 1; and

Fig. 10 is an enlarged, transverse sectional view on the line 10—10 of Figs. 1 and 6.

Fig. 11 is an enlarged transverse section on the line 11—11 of Fig. 5;

Fig. 12 is a top plan view of the knife tube;

Fig. 13 is a side view of the knife tube;

Fig. 14 is an enlarged, fragmentary, longitudinal sectional view similar to Fig. 5, for more clearly showing the circumferential interlocking of the several parts; and

Fig. 15 is an enlarged, transverse section on the line 18—18 of Fig. 4.

The device, as portrayed in the drawings, comprises an outer tubular cover or casing 28, preferably made of a pyralin or some similar material, an inner metal tube 21, fitting closely within the outer casing, and which inner tube may extend beyond the outer casing at least at one end as shown at 22. The opposite end of the inner tube is formed in accordance with the requirement of providing a magazine pencil as indicated at 23 or a fountain pen as indicated at 24.

At the end opposite to the pen or pencil, the inner tube 21 is formed to contain a knife mechanism so arranged that a knife blade 25 can be housed within the casing as shown in full lines in Fig. 5, or projected therefrom as shown in full lines in Fig. 4.

This knife mechanism comprises a relatively short tubular member 25 which is somewhat rectangular in cross-section having two opposite sides 27 and 28 which are cylindrical shaped and of a size to fit snugly within the cylindrical inner tube 21 and two alternate and oppositely disposed flattened sides 29 and 30, the functions of which will be explained later.

The tubular member 26 is preferably formed up out of sheet metal. It is so formed that the seam or joint 31 is located in the rounded side 27 and extends longitudinally thereof from end to end.

Extending from a point near to the inner end of the member 26 the joint 31 is widened to form a longitudinal slot 32.

The tubular case 21 is provided with a longitudinal slot 33 which registers with the slot 32 when the two parts are properly assembled and the outer case 20 is provided with a similar registering slot 34.

For the purpose of moving the knife blade 25 in and out it is provided, adjacent to its inner or base end, with a rigid projection 35 which extends out through the registering slots 32, 33 and 34 and is provided at its outer end with a flat head 36 which is larger in diameter than the width of said slots.

The projection 35 comprises a stud-like member 37 which is screw-threaded to fit in a threaded hole in the knife blade and is provided with a rigid collar 38 which, when the stud is screwed hard into place, holds the stud against becoming loosened.

The device, as portrayed in the drawings, comprises an outer tubular cover or casing 28, preferably made of a pyralin or some similar material, an inner metal tube 21, fitting closely within the outer casing, and which inner tube may extend beyond the outer casing at least at one end as shown at 22. The opposite end of the inner tube is formed in accordance with the requirement of providing a magazine pencil as indicated at 23 or a fountain pen as indicated at 24.

At the end opposite to the pen or pencil, the inner tube 21 is formed to contain a knife mechanism so arranged that a knife blade 25 can be housed within the casing as shown in full lines in Fig. 5, or projected therefrom as shown in full lines in Fig. 4.

This knife mechanism comprises a relatively short tubular member 25 which is somewhat rectangular in cross-section having two opposite sides 27 and 28 which are cylindrical shaped and of a size to fit snugly within the cylindrical inner tube 21 and two alternate and oppositely disposed flattened sides 29 and 30, the functions of which will be explained later.

The tubular member 26 is preferably formed up out of sheet metal. It is so formed that the seam or joint 31 is located in the rounded side 27 and extends longitudinally thereof from end to end.

Extending from a point near to the inner end of the member 26 the joint 31 is widened to form a longitudinal slot 32.

The tubular case 21 is provided with a longitudinal slot 33 which registers with the slot 32 when the two parts are properly assembled and the outer case 20 is provided with a similar registering slot 34.

For the purpose of moving the knife blade 25 in and out it is provided, adjacent to its inner or base end, with a rigid projection 35 which extends out through the registering slots 32, 33 and 34 and is provided at its outer end with a flat head 36 which is larger in diameter than the width of said slots.

The projection 35 comprises a stud-like member 37 which is screw-threaded to fit in a threaded hole in the knife blade and is provided with a rigid collar 38 which, when the stud is screwed hard into place, holds the stud against becoming loosened.
The head 36 of the projection 35 is integral with a short stem 59 which projects through and can slide longitudinally in said registering slots. The inner end of the stem 59 is reduced to form a shoulder 40 and the reduced end is threaded into the outer end of the stud 31. The shoulder 40 serves to hold the outer part of the projection form being inadvertently loosened once the parts are properly assembled.

The slot 32 in the knife casing 26 is enlarged at its two ends as best shown at 41, Fig. 13 and also at intermediate points as shown at 43 and the outer end of the collar 38 on the stud 31 is reduced in diameter as shown at 45, Fig. 3 to fit in these enlargements.

The base or inner end 44 of the knife blade fits fairly close edgewise between the flattened sides 29 and 30 of the knife tube 26 and can move up and down to some extent between the rounded sides 27 and 28 of said tube, that is, toward and from the slotted side of the casing.

The knife blade is normally held yieldingly pressed toward the said slotted side by a spring 45 which is in the form of a flat spring, bowed up enough to fit between one side of the blade and the inside edge 28 of the blade tube 26.

The blade is pushed up by the spring 45 with sufficient force to make the outer end 43 of the stud 31 snap into the enlargements 41 or 42 of the slot 32 when brought into registry therewith as the blade is moved longitudinally out or in. The spring 45 is held against being moved longitudinally when the blade is moved by the engagement of its end in small holes 46 in the lower wall 35 of the tube 26, the ends of the spring being pointed for this purpose.

The inner end of the tube 26 is open and in assembling the knife blade with the tube 26, the stud 31 is first screwed into the blade, the spring 45 is then pushed into the tube with its ends in the holes 46 and then the blade is pushed into the tube 26 through its open rear end, the spring 45 being sufficiently to permit the stud to enter the tube and the blade be pushed in until the stud snaps into one of the enlargements formed to receive its outer end.

As the inner tubular casing 21 is cylindrical in cross-section where the tube 26 fits therein I provide simple means for causing the accurate circumferential registration of the several slots 32, 33 and 34. This circumferential registering means comprises an interlocking member 47 which is arranged to circumferentially engage the outer casing 29, the inner tubular casing 21 and the knife tube 26. The outer end of this interlocking member, in one form may be formed to serve as a spring clip 48 to engage a pocket edge in the usual manner to retain the device in a pocket.

As best shown in Figs. 5 and 8, the inner end portion of the interlocking member 47 which is a relatively thin flat bar is bent radially inward as shown at 49 to pass through small radial, registering slots provided in the outer casing 29 and the inner tubular casing 21 and is then bent off at right angle and in the opposite direction to the clip end 48 as shown at 50 and arranged to lie flat against the inner surface of the inner tubular member 21. The member 47 fills the registering slots in the casing 29 and the tubular member through which it passes and thus circumferentially interlocks these two members.

The wall 30 of the knife tube 26 is formed to circumferentially interlock with the inner end portion 50 of the interlocking member and is also formed to press said end tightly against the inner surface of the inner tube 21.

Such construction is best shown in Figs. 11 to 14. At the upper and lower sides of the flat side 30 of the knife tube, the wall of the tube is slit longitudinally as shown at 51 at the place where the inner part 60 as shown in Fig. 15, of the interlocking member contacts with said tube and the outer opposed edges of the two slits are pressed slightly outward to engage the outer edges of the part 50 of the member 47, and thus circumferentially interlock the knife tube with the said member 47 and with the two tubes 20 and 21. In addition to this, the part 52 of the knife tube 26 which lies between the two slits 51 is slightly bowed outwardly both circumferentially and longitudinally as shown in Figs. 11 and 14 so that it binds the part 50 tightly between the inner surface of the tube 21 and said formed out portion 52 of the knife tube.

The arrangement is such that after the interlocking member 47 has been assembled with the two tubes 20 and 21 as described, hereinafter, the knife tube with the knife blade assembled therewith can be pushed endwise into the end portion of the tube 21. In this action the knife tube can be pushed in fairly easily until it has nearly reached its normal position and then the further insertion of the knife tube binds the interlocking part 50 of the interlocking member as has been described. It will be understood that the parts can likewise be readily taken apart.

Once the knife tube has been inserted into its position, its longitudinal slot 32 is in accurate registry with the slots 33 and 34 in the tubes 20 and 21 respectively, and the stud 31 can be seen through said slots. Preferably at the time of assembly the stud 31 is in the innermost end enlargement 41 of the knife tube and in such position it is a simple matter to screw the operating part 38 into the outer end of the stud 37.

In the form of the device shown in Fig. 2, the outer end of the circumferential locking member 41 is not formed into a pocket clip but is merely bent down into contact with the casing. A pocket clip at this point would suspend the pen with the pen point hanging down which might cause the pen to leak ink.

It will be seen that in the finished article, by the construction described, the registering slots in which the knife operating member 55 moves back and forth is just a plain, straight narrow slot without any unsightly enlargements, as the enlargements 40 and 41 of the slot 32 in the knife tube are all covered by the outer tubes.

It will be seen that the joint 31 in the knife tube is at one flat side of the knife blade and that the ordinary use of the knife blade will not tend to strain or open said joint.

The outer end 53 of the knife tube projects somewhat beyond the outer end 54 of the inner tube 21. I form said outer end portion 53 of the knife tube to bring the curved walls 27 and 28 thereof towards each other close enough to fairly fit the base portion 44 of the knife blade so that when the blade is fully projected, as shown in full lines Fig. 4, the blade will be held fairly tightly sidewise. In forming this end portion 53 inwardly as described, I remove some material from the flat sides of the tube as shown at 55, Fig. 6, but I leave sufficient material at the edges of the slot thus formed particularly at the back edge of the blade so that these edges can be formed in to provide a support for the back of
the blade as shown at 56 to resist pressure which may be applied to the opposite edge of the blade, in use.

As shown in the drawings, while one end portion of the inner tube 21 is formed to provide space for the knife mechanism and to co-operate therewith, the opposite end may be formed to accommodate a pencil mechanism and that said end may be corrugated longitudinally to form storage spaces for leads as shown, at 57, Fig. 7.

To cover the projecting end 22 of the inner tube 21 and also the projecting end portion 53 of the knife tube, I provide a removable hollow cap 58 as shown in dotted lines Fig. 1. To frictionally retain the cap 58 in place the projecting end 22 of the inner tube 21 is formed to provide two yielding tongues 59 which are formed outwardly slightly beyond the outer surface of the part 22 and are pressed inwardly when the cap 58 is forced over them.

As many modifications of the invention will readily suggest themselves to one skilled in the art, I do not limit or confine the invention to the specific details of construction herein shown and described except within the scope of the appended claims.

I claim:

1. In a knife of the kind described, a tubular casing, an inner tubular member arranged and adapted to be forced into said tubular casing from one end, said inner member being substantially rectangular in cross-section and with slightly rounded corners, two opposite sides at one end of said inner member cut away at one end and the alternate sides formed inwardly to provide a relatively thin slot at the end of said member, one of the sides of said inner member the free end portion of which is formed inwardly provided with a central longitudinal slot, a knife blade within said inner member, said tubular casing provided with a similar longitudinal slot registering with the slot in said inner member, a projection secured rigidly on one side of the blade adjacent to its inner end, a blade moving member projecting out from and secured in said projection and having a shank portion adapted to pass through and move freely along said longitudinal slots, the slot in the inner member being enlarged at intervals and the outer end of said projection arranged and adapted to enter said enlargements and lock the blade against longitudinal movement in said inner member, a spring within said inner member arranged and adapted to yieldingly force the blade toward the slotted wall of said inner member, the arrangement being such that the outer end of said projection is adapted to be forced into said enlargements of said slot when brought into registry therewith, and the inner end portion of said blade substantially fitting within said thin slot at the outer end of said inner member when the blade is projected sufficiently.

2. The invention as defined in claim 1, the said outer end of said inner member being closed at the rear edge of the blade as and for the purpose specified.

3. In a knife of the kind described, a tubular casing, a knife blade, a second tube within which the blade is longitudinally movable, the second tube arranged within the casing and having a longitudinal slot in one side, a projection rigid with the blade, the slot having enlargements at intervals, the projection having an outer end which fits within said enlargements, the casing having a slot registering with the slot in the inner tube substantially equal in width with the slot in the inner tube, a blade operator having a shank passing through said slots and mounted rigidly in said projection, an enlarged head on the outer end of said shank, means in the inner tube yieldingly urging the blade to cause said projection to enter said enlargements, and outer cover casing fitting upon said casing, the cover casing having a longitudinal slot registering with the slot in said casing, and a circumferential locking member, passing through openings in said casing and cover and having engagement with said inner tube and preventing relative circumferential movement of the three tubes.

4. In a knife of the kind described, a tubular casing, a knife blade, a second tube within which the blade is longitudinally movable, the second tube arranged within the casing and having a longitudinal slot in one side, a projection rigid with the blade, the slot having enlargements at intervals, the projection having an outer end which fits within said enlargements, the casing having a slot registering with the slot in the inner tube substantially equal in width with the slot in the inner tube, a blade operator having a shank passing through said slots and mounted rigidly in said projection, an enlarged head on the outer end of said shank, means in the inner tube yieldingly urging the blade to cause said projection to enter said enlargements, an outer cover casing fitting upon said casing, the cover casing having a longitudinal slot registering with the slot in said casing, and a circumferential locking member, passing through openings in said casing and cover casing and having engagement with said tube and preventing relative circumferential movement of the three tubes.

5. In a knife of the kind described, a tubular casing, a knife blade, a second tube within which the blade is longitudinally movable, the second tube arranged within the casing and having a longitudinal slot in one side, a projection rigid with the blade, the slot having enlargements at intervals, the projection having an outer end which fits within said enlargements, the casing having a slot registering with the slot in the inner tube substantially equal in width with the slot in the inner tube, a blade operator having a shank passing through said slots and mounted rigidly in said projection, an enlarged head on the outer end of said shank, means in the inner tube yieldingly urging the blade to cause said projection to enter said enlargements, a circumferential locking member passing through an opening in the casing the inner tube provided with circumferentially spaced longitudinally extending shoulders between which the inner end of said locking member is received, and the wall of the inner tube between said shoulders rounded out to bind said inner end of said locking member tightly against the inner surface of said casing.

6. The invention as defined in claim 5, the outer end of the locking member formed to constitute a spring pocket clip.

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