

Description

Utility knives are cutting tools capable of a wide range of uses basically comprising a handle into which a replaceable knife blade is fitted and immobilized so as to protrude from one end.

In some instances the knife is such that the blades must be completely removed and disposed of when the exposed end becomes blunt, at which time a new blade is fitted. More commonly, the knife has a blade shaped to possess two sharpened ends (e.g. shaped as a symmetrical trapezium with the long edge sharpened) so that when one end becomes blunt the blade can be taken out, reversed, and replaced to expose the other for use. Only when the other end becomes blunt is the blade completely replaced by a new blade. In a preferred form, such blades can also be "retractable" i.e. selectively extendable to any one of a number of immobilisable positions.

In recent years the blade has been embodied as a long metal strip, sharpened along one edge and provided with score lines or like lines of weakness across its width at an acute angle, that is, so as to come to a sharp point at the sharpened edge. As for a simpler retractable blade this elongated blade is supported within the handle on a carrier, and the resilient part of carrier is biased against the teeth of a longitudinal rack. A press button extending through a longitudinal slot in the handle enables the user to press the resilient part of the carrier out of engagement with its rack and slide it up or down within the handle. Thus, the blade can be retracted for safety, or can be forwarded to a desired operative position. When desired, since a line of weakness is apparent, beyond the handle, the blade can be broken transversely to expose a new sharp point and sharpened edge portion.

Such utility knives often have handles formed essentially as two longitudinally divided part shells, the exact parting line along the handle being designed in practice for reasons of function or appearance not to be a simple straight longitudinal bisection.

Originally, the part shells were held together by one or more transverse threaded bolts. To change, or reverse, a blade the bolts were unscrewed, one shell was removed, and the blade manipulated as necessary. Typically a "replaceable" blade, whether retractable, and whether for single use or double use is provided with holes or notches to fit by mechanical interengagement within the handle so as to resist longitudinal pressure (otherwise serving to push the blade back when in use) and for replacement the blade has therefore to be removed from and fitted into such engagement with corresponding projections or shoulders. Transverse clamping effect on the blade, also serving to grip

the blade against movement, does exist but is usually of secondary importance against such longitudinal movement. It may however be a significant protection against lateral movement of the blade.

More recently, the so-called "wedge-lock" assembly has been used. In this, the part shells, at a forward location of their parting line (and on both side regions) are formed with a wedging interlock so directed that minor longitudinal movement of one part shell relative to the other causes the wedge formations on the parting line to slide one on the other and thereby draw together, or release, the part shells in a transverse direction. This minor longitudinal movement and thus the clamping or releasing of the part shells can be achieved by a single bolt with a knurled head for finger operation, located at the rear of the handle and threaded in one shell while bearing on the other.

Such a "wedge lock" assembly is particularly useful for the knives with retractable blades. This is because, from time to time, the blade must be retracted or must be advanced and then fixed again. The clamping together of the two part shells, even if it does not have a major effect in resisting longitudinal pressures in use, does militate against easy advancement/retraction of the slide over its rack, and it is usually preferred to slacken the shells slightly so as to facilitate advancement or retraction. An end bolt and "wedge lock" configuration, manually operated, is much more convenient for this essentially brief adjustment than the use of a screwdriver to adjust one or more transverse screws.

In practice it has been established that the transverse blade clamping force using the "wedge lock" assembly, which is exerted over a wedging plane, can be a significant component of the longitudinal resistance to movement of the blade in use; this can lead to advantageous modifications e.g. in the shape and strength of the rack and slide.

Use of an end, or longitudinal, threaded bolt, instead of a transverse bolt or bolts also permits improved design of the effective interior of the part shells when assembled. One aspect of this is the ready provision, even with a short handle, of enough internal space to hold a stack of spare blades, of the single or double use type or of the retractable type.

US-A-4.240.202 describes an utility knife according to the preamble of claim 1. In this document, the aperture through which the shank passes is not an open slot. To disconnect the two halves of this knife, it is necessary to completely remove the nut from the bolt and then to loosen the bolt from the apertures in the respective rear walls.

We have now discovered, however, that use of a stationary, rearwardly-projecting, threaded shank

with an operating nut threaded thereon, is even more advantageous and permits a number of inter-related design improvements.

In one aspect therefore the invention provides a utility knife of the type with a handle comprising two elongate part shells capable of assembly about generally longitudinal parting lines so configured at a forward location thereof that relative longitudinal movement of the part shells may cause them to approach each other and clamp to form an assembly locating and immobilising a blade protruding from one end thereof; in which one part shell is provided with a rearwardly extending threaded shank, and the shank passes through an open slot in a rear wall of the other part shell to accommodate a turnable nut whereby relative longitudinal movement of the part shells may be achieved by turning the nut upon the shank to bear upon said rear wall and whereby, when the nut is turned to a suitable position, the rear wall can be removed transversely from the shank.

Such a shank can further disencumber the internal space, can give an arrestable member to protect against undesired separation on blade extension, can give a means of permanently uniting the operating member (i.e. nut) without risk of loss, and can give an auxiliary wedge-face to assist clamping.

Usually the shank is sufficiently long to extend beyond the nut when the part shells are fully assembled with the nut tightened.

If this is ensured, then a knife can be fabricated in which the said aperture is an open slot and in which the said other part shell includes a portion located to arrest the shank transversely on such full assembly, whereby free separation of the part shells cannot be achieved until the nut has allowed the first part shell to advance so that the end of the shank is no longer arrested.

For a convenient embodiment we prefer such a knife in which the said shank terminates in a spur extending rearwardly from part only of the shank cross section; and in which the arrest portion comprises a transverse web located to fit beneath the said spur. For example the web may be formed to project forwardly from the inner periphery of a ring guard extending from the said other portion rearwardly around the shank and nut. Therefore, if the spur is shaped to have an upwardly sloping under-surface it can be positioned to cooperate with an edge of the said transverse web and to constitute a rearwardly located auxiliary clamping configuration for the two part shells.

Another additional and alternative configuration is to provide a knife as defined above in which the shank possesses at least one radial protuberance at its end and the nut is correspondingly formed with at least one complementary radial detent for-

mation in an end face, to prevent further rotation and separation of the nut. Preferably the shank possesses two different radial protuberances successively arranged in the direction of rotation with (a) a lower gently contoured profile over which the detent may resiliently ride in either direction on exertion of a predetermined and warning level of force and (b) a higher, profile step-like to prevent further rotation and separation of the nut but gently contoured to permit initial assembly in the other direction.

For convenience in manufacture it is preferred if the two part shells are integral die cast structures and the thread on the shank is accordingly interrupted at its sides to permit shell removal from the mould.

The invention also extends to use of the space left unencumbered by the rearward (i.e. external) protrusion of the shank. Thus the invention further envisages such knives, as described above, accommodating a stack of spare blades at a rearward location of the said first part shell.

Preferably, the stack is held in place by a resilient leaf of material biased downwardly from an elongate holding frame located within the handle. By way of example a knife may be embodied in which the elongate holding frame defines a longitudinally directed slot with edge portions downwardly directed to provide a rigid structure, said slot permitting passage of the pushbutton of a blade slider protruding from a longitudinal slot in the said other part shell; and in which the frame is foldable upwards about a line forward of the said rigidified edges to allow access to the stack of blades when the part shells are separated. In such an instance a forwardly located position of the said frame may be downwardly biased to bear upon the protruding blade.

The invention will be further described with reference to the accompanying drawings, in which:- Figure 1 is a median longitudinal section through an embodiment of utility knife illustrating features of the present invention;

Figure 2 is a section along line II-II of Figure 1;

Figure 3 is a section along line III-III of Figure 1;

Figure 4 is a plan view of the lower part of the utility knife shown in Figure 1 with an assembly nut retracted;

Figures 4a, 4b and 4c show details of the assembly nut construction and assembly;

Figure 5 is a side view of the lower part of the knife as shown in Figure 4, partly broken away, and with a blade-stack restraint raised;

Figure 6 is a side view of a variant embodiment of utility knife, partly broken away; and

Figure 7 is a side view as in Figure 6 with the part shells slightly parted.

The utility knife shown in Figures 1 to 5 can be considered in three main parts namely, a lower elongate part shell 1 and associated manually operable assembly nut 2; an upper elongate part shell 3 fitting with the lower shell 1 to define a utility knife handle; and the presentation and storage assembly 4, located within the assembled part shells 1 and 2 with an operative blade end protruding.

The lower elongate part shell 1 can also be seen advantageously in an external view in Figure 5, and in assembly (of a slightly varied embodiment) in the external views of Figure 6 and 7. It is a die-cast alloy structure which externally possesses two forward "wedging" structures 5 (see also Figure 4) with inclined wedge surface 6; a smooth base wall 7; and a rearwardly projecting shank 8 threaded on its upper and lower surfaces and terminating in integral spur 9 extending rearwardly from its upper portion. Internally it is shaped to support various features of the internal assembly. Thus, forwardly, it possesses two longitudinal support ribs with coplanar upper edges 11, and two longitudinal parallel guide walls 12. In an intermediate location it possesses two further parallel guide ribs 13a, over a thickened wall section 13b. Rearwardly it possesses two parallel support pillars 14 extending from the rear wall 15 of the part shell.

The nut 2 and preferred features of its assembly are shown in Figures 4a, 4b and 4c. It comprises an integral molded polymer unit with an internal cylinder 16 possessing bore 17 with internal threads 17a and an external contoured frustoconical cover 18 spaced from the internal cylinder 16 by longitudinal ribs 19 and possessing gripping flutes 20 on its outer face. In the end surface thickness 2a of the nut the threaded bore 17 is modified in shape by means of a recess 21 and a detent 22 adjacent thereto. This nut is assembled on shank 8 with threads 8a, 8b on upper and lower surfaces only (to achieve mold release of the die-cast article) and may be located inwards of spur 9 as shown in Figure 1 or outwards to cover spur 9 as shown in Figures 4 and 5.

At the end of spur 9 there is a first integral radial protuberance 23 of lesser radial height and gradual contours 23a and a second such protuberance 24 with greater radial height, possessing a step contour 25 and a gradual outer slope 25a. These protuberances should be contoured and dimensioned to cooperate with recess 21 and detent 22 as explained more fully below.

The upper elongate part shell 3 may again be generally seen from the embodiment of Figures 6 and 7. It is again an integral die-cast alloy structure. Externally it possesses two forward wedge structures 26 with wedge surfaces 27, a smooth upper outer wall 28 with an elongate slot 29 extending centrally therethrough over a central part of

its length, and a downwardly extending rear wall 30. Wall 30 is vertically slotted at 31, the slot being open from below to accommodate loosely an internal unthreaded portion 8c of shank 8. The integral structure of the upper part shell 3 is continued in a protective integral ring wall 32 extending behind the nut 2 and the shank 8 and spur 9. The rear, transverse, portion 33 of this ring wall has an integral ledge or web 34 extending into the ring space beneath spur 9.

The longitudinal slot 29 of shell 3, as also shown in Figure 3, has mutually inclined upper walls 35 and parallel lower walls 37 configured as teeth 38 to constitute a rack. The end tooth 38a is longer, as a stop member. The slot 29 also possesses inclined end walls 39.

The shell 3 includes a single integral longitudinally extending projection 40 at a rearward position.

The internal assembly 4 comprises an upwardly biased pushbutton 41 and metal slider 42, and a trapezoidal blade 43 carried on the slider as known in the art. The slider 42 is a shallow metal tray and rides upon the coplanar top edges 11 on walls 10 with its walls 42a located between the internal shell walls 12. It is spring biased so that it normally forces the polymer push button 41 upwardly whereby transverse projections 44 enter between the teeth 38 and are held thereby against longitudinal movement. Blade 43 is immobilized on the slider 42 by suitable lugs or projections in blade recesses 45 opposite cutting edge 46.

Above the level of the slider 42 and blade 43 is located an integral leaf of resilient polymeric material 47. This possesses a forward platform region 48 (pressed into place between stops 48a in the lower part shell 1) and a forwardly projecting resilient central tongue 49 possessing shallow ribs 50 on its underside to press against the blade/slider assembly to assist in stabilising it as described below. Rearwardly the leaf 47 has two side portions 51 defining a broad slot 52 in which the pushbutton 41 can move without hindrance. The side portions 51 have downwardly projecting inner walls 51a defining the edges of the slot 52 and resistant to flexure over a transverse flexing axis. At the rearward end a second platform 53 is supported at its rearmost edge 54 on the tops of support pillars 14, being held down upon these by the underside of integral upper part shell projection 40.

Platform 53 defines by downward stepped wall 55 a resilient leaf 59 extending along beneath the slot 52 and tapering slightly in width. At its upper surface the leaf presents a projection 57. This resilient leaf holds down a stack of spare blades 60 as shown in Figure 1 during use of the knife.

Figures 6 and 7 show an embodiment of the invention which differs in detail. Thus, for example, no stack of spare blades is shown and the internal

structure is unspecified. Many features, however, are identical, for example the upper part shell 3 and especially its rearward portions 32, 33 and 34, the shape of the nut 2, and the general nature of the shank 8 and the spur 9. However, spur 9 differs in detail: instead of extending only from the upper half of the shank 8 it is formed with a slanting lower surface 61 which therefore meets and slides up the ledge 34 as the nut is tightened. Moreover, projection 40 inside upper part shell 3 is cut away at 62, as shown, to accommodate such movement.

Initial assembly of the knife for use, extension or retraction of the blade, and blade replacement, will now be described with reference to the above illustrated embodiments.

Initial factory assembly starts from lower part shell 1, nut 2, upper part shell 3, stack of blades 60, slider/pushbutton unit 42/41, the blade 43 and the polymer leaf 47.

Firstly, nut 2 is forced to turn so that the detent 22(a) rides up gently sloping surface 25a and thus over the stepped contour 25 and (b) thereafter rides just past the lesser protuberance 23 with its symmetrical gentle slopes 23a. At this stage nut 2 will be in the relationship to shank 8 as shown in Figure 4. Blades 60, slider/pushbutton 42/41, and operating blade 43 are then laid in their designated areas. Polymer leaf 47 is placed over these units, (as a permanent assembled feature thereafter) and the upper shell is fitted over the whole assemblage so that the slot 29 passes down over shank portion 8c, so that the tapering wedge faces 6 and 27 are located opposite one another, and so that the pushbutton 41 extends through the slot in the handle. The nut 2 is tightened, and the two part shells are forced towards one another by the action of the wedging surfaces 6 and 27 until the knife is fully and tightly assembled with the blade held by the slider and by the two part shells at their forward edges.

For blade advancement and retraction, nut 2 is slackened slightly so that the forward edges of the part shells 1, 3 do not grip the blade: slider 42 is operated to a new rack position by pushbutton 41: and nut 2 is tightened up again. Retraction is of course similar.

For blade replacement from the stack 60, the nut 2 is turned backwards until a transient warning difficulty is encountered by virtue of the detent 22 riding up and down surfaces 23a, this indicating that the 'stop' position then encountered is intentional and that force should not be used to overcome consequent further resistance. The upper half shell 3 is raised. The leaf 47, being elastic, lifts slightly and can be bent resiliently upwards (see Figure 5) for easy removal of a blade from stack 60, and for its use as a replacement of old blade 43. Subsequent reassembly of the components

takes place as before.

The structures and operations shown and described demonstrate a number of advantages over prior art designs.

Firstly, the use of an integral rearwardly projecting shank 8 gives the immediate advantage, as compared to the use of a through bolt with a manually turnable head, that no space has to be allowed within the housing, whereby space is available in the unencumbered rearward part of the shell for a stack of spare blades.

Also, the joint provision of a spur 9 extending from the upper half of shank 8, and the integral ledge 34 is a considerable advantage in practical use. Hitherto, with a threaded bolt, slackening of the assembly for blade advancement or retraction effectively disconnects the two shells. The knife assembly can come apart, especially if the user is inexperienced or is working with cold hands or in an awkward location. With the present inventive feature, the two part shells are prevented from coming apart completely by the overlap between the spur 9 and the ledge 34 until substantially complete turning of the nut, well beyond that needed for mere advancement or retraction, has taken place. Such a spur can also provide a safety feature for the nut itself. Hitherto, careless unscrewing of the threaded bolt could lead to complete removal and accidental loss. With the present inventive features the nut catches by detent 22 on protrusion 25 in its rearmost position and thus cannot be removed and dropped.

The spur moreover can be fashioned as shown in Figures 6 and 7, with a slanting undersurface 61. In such a case the spur 9 is not spaced from ledge 34 but rides up over the edge of this ledge. In other words a rearwardly located second wedging location is provided, so that the part shells do not clamp first at the front and then progressively along their length but clamp in a controlled fashion essentially simultaneously over their whole parting line. This is both better design in that less wear and distortion is likely at the wedging surfaces 6 and 27 and convenient to users in that the different available blade thicknesses can both be used in the knife as shown in Figures 6 and 7 by way of example.

Finally, the internal location of shank 8, and the facility thereby given for blade storage can be utilised to give a suitable blade stack retention means of the type shown avoiding rattling of loose blades with unacceptable noise and risk of damage. The nut is retained on spur 9 even at maximum possible unturning, so that opening of the handle for blade changeover can be done easily at any time without loss. Also the elongate nature of polymer leaf 47, as possible in the present design, means that the leaf can be given a rigid structure



at the sides 51 of slot 52 where needed as a basis for the stack retaining leaf 59: a bendable portion at the platform 48 to allow upward flexure of the leaf for access to the stack; and a resilient tongue 49/50 to keep the slider and existing blade in place while the stack is being accessed.

Claims

1. A utility knife of the type with a handle comprising two elongate part shells (1,3) capable of assembly about generally longitudinal parting lines so configured at a forward location (6) (27) thereof that relative longitudinal movement of the part shells may cause them to approach each other and clamp to form an assembly locating and immobilising a blade (43) protruding from one end thereof; characterised in that one part shell (1) is provided with a rearwardly extending threaded shank, and the shank (8) passes through an open slot (31) in a rear wall (30) of the other part shell (3) to accommodate a turnable nut (2) whereby relative longitudinal movement of the part shells (1, 3) may be achieved by turning the nut (2) upon the shank (8) to bear upon said rear wall (30), and whereby, when the nut is turned to a suitable position, the rear wall (30) can be removed transversely from the shank (8).
2. A utility knife as claimed in Claim 1 characterised in that the shank (8) is sufficiently long to extend beyond the nut (2) when the part shells (1,3) are fully assembled with the nut (2) tightened.
3. A utility knife as claimed in either preceding claim characterised in that the said other part shell (3) includes a portion (34) located to arrest the shank (8) transversely on such full assembly, whereby free separation of the part shells (1,3) cannot be achieved until the nut (21) has allowed the first part shell (1) to advance so that the end (9) of the shank (8) is no longer arrested.
4. A utility knife as claimed in Claim 3 characterised in that the said shank (8) terminates in a spur (9) extending rearwardly from part only of the shank cross section; and in that the arrest portion comprises a transverse web (34) located to fit beneath the said spur (9).
5. A utility knife as claimed in Claim 4 characterised in that the web (34) is formed to project forwardly from the inner periphery of a ring guard (32) extending from the said other portion (3) rearwardly around the shank (8) and nut (2).
6. A utility knife as claimed in Claim 4 or 5 characterised in that the spur (9) has an upwardly sloping undersurface (61) positioned to cooperate with an edge of the said transverse web (34) and to constitute a rearwardly located auxiliary clamping configuration for the two part shells (1, 3).
7. A utility knife as claimed in any one preceding claim characterised in that the shank (8) possesses at least one radial protuberance (23, 24) at its end and the nut (2) is correspondingly formed with at least one complementary radial detent (21, 22) formation in an end face, to prevent further rotation and separation of the nut (2).
8. A utility knife as claimed in Claim 7 characterised in that the shank possesses two different radial protuberances (23, 24) successively arranged in the direction of rotation with (a) a lower gently contoured profile (23) over which the detent (22) may resiliently ride in either direction on exertion of a predetermined and warning level of force and (b) a higher profile (24) step-like to prevent further rotation and separation of the nut (2) but gently contoured to permit initial assembly in the other direction.
9. A utility knife as claimed in any one preceding claim characterised in that the two part shells (1, 3) are integral die cast structures and the thread (8a, 8b) on the shank (8) is accordingly interrupted at its sides to permit shell removal from the mould.
10. A utility knife as claimed in any one preceding claim characterised by accommodating a stack (60) of spare blades at a rearward location of the said first part shell (1).
11. A utility knife as claimed in Claim 10 characterised in that the stack (60) is held in place by a resilient leaf (59) of material biased downwardly from an elongate holding frame (47, 51) located within the handle.
12. A utility knife as claimed in Claim 11 characterised in that the elongate holding frame (47, 51) defines a longitudinally directed slot (52) with edge portions (51a) downwardly directed to provide a rigid structure, said slot (52) permitting passage of the pushbutton (41) of a blade slider (42) protruding from a longitudinal slot (29) in the said other part shell (3); and in

at the sides 51 of slot 52 where needed as a basis for the stack retaining leaf 59: a bendable portion at the platform 48 to allow upward flexure of the leaf for access to the stack; and a resilient tongue 49/50 to keep the slider and existing blade in place while the stack is being accessed.

Claims

1. A utility knife of the type with a handle comprising two elongate part shells (1,3) capable of assembly about generally longitudinal parting lines so configured at a forward location (6) (27) thereof that relative longitudinal movement of the part shells may cause them to approach each other and clamp to form an assembly locating and immobilising a blade (43) protruding from one end thereof; characterised in that one part shell (1) is provided with a rearwardly extending threaded shank, and the shank (8) passes through an open slot (31) in a rear wall (30) of the other part shell (3) to accommodate a turnable nut (2) whereby relative longitudinal movement of the part shells (1, 3) may be achieved by turning the nut (2) upon the shank (8) to bear upon said rear wall (30), and whereby, when the nut is turned to a suitable position, the rear wall (30) can be removed transversely from the shank (8).
2. A utility knife as claimed in Claim 1 characterised in that the shank (8) is sufficiently long to extend beyond the nut (2) when the part shells (1,3) are fully assembled with the nut (2) tightened.
3. A utility knife as claimed in either preceding claim characterised in that the said other part shell (3) includes a portion (34) located to arrest the shank (8) transversely on such full assembly, whereby free separation of the part shells (1,3) cannot be achieved until the nut (21) has allowed the first part shell (1) to advance so that the end (9) of the shank (8) is no longer arrested.
4. A utility knife as claimed in Claim 3 characterised in that the said shank (8) terminates in a spur (9) extending rearwardly from part only of the shank cross section; and in that the arrest portion comprises a transverse web (34) located to fit beneath the said spur (9).
5. A utility knife as claimed in Claim 4 characterised in that the web (34) is formed to project forwardly from the inner periphery of a ring guard (32) extending from the said other portion (3) rearwardly around the shank (8) and nut (2).
6. A utility knife as claimed in Claim 4 or 5 characterised in that the spur (9) has an upwardly sloping undersurface (61) positioned to cooperate with an edge of the said transverse web (34) and to constitute a rearwardly located auxiliary clamping configuration for the two part shells (1, 3).
7. A utility knife as claimed in any one preceding claim characterised in that the shank (8) possesses at least one radial protuberance (23, 24) at its end and the nut (2) is correspondingly formed with at least one complementary radial detent (21, 22) formation in an end face, to prevent further rotation and separation of the nut (2).
8. A utility knife as claimed in Claim 7 characterised in that the shank possesses two different radial protuberances (23, 24) successively arranged in the direction of rotation with (a) a lower gently contoured profile (23) over which the detent (22) may resiliently ride in either direction on exertion of a predetermined and warning level of force and (b) a higher profile (24) step-like to prevent further rotation and separation of the nut (2) but gently contoured to permit initial assembly in the other direction.
9. A utility knife as claimed in any one preceding claim characterised in that the two part shells (1, 3) are integral die cast structures and the thread (8a, 8b) on the shank (8) is accordingly interrupted at its sides to permit shell removal from the mould.
10. A utility knife as claimed in any one preceding claim characterised by accommodating a stack (60) of spare blades at a rearward location of the said first part shell (1).
11. A utility knife as claimed in Claim 10 characterised in that the stack (60) is held in place by a resilient leaf (59) of material biased downwardly from an elongate holding frame (47, 51) located within the handle.
12. A utility knife as claimed in Claim 11 characterised in that the elongate holding frame (47, 51) defines a longitudinally directed slot (52) with edge portions (51a) downwardly directed to provide a rigid structure, said slot (52) permitting passage of the pushbutton (41) of a blade slider (42) protruding from a longitudinal slot (29) in the said other part shell (3); and in



that the frame (47,51) is foldable upwards about a line forward of the said rigidified edges (51a) to allow access to the stack (60) of blades when the part shells (1,3) are separated.

13. A utility knife as claimed in Claim 11 or 12 characterised in that a forwardly located portion (49) of the said frame (47, 51) is downwardly biased to bear on the protruding blade (43).

Patentansprüche

1. Mehrzweckmesser mit Handgriff, umfassend zwei längliche Schalenteile (1, 3), welche um im wesentlichen längs verlaufende Trennlinien zusammensetzbar und in ihrem vorderen Abschnitt (6) (27) so ausgelegt sind, daß eine Relativbewegung der Schalenteile in Längsrichtung bewirkt, daß diese sich auf einander zu bewegen und in Klemmstellung zur Bildung einer Baugruppe für die Positionierung und Immobilisierung einer Klinge (43) gehen, die von einem Ende derselben hervorsteht, dadurch gekennzeichnet, daß ein Schalenteil (1) mit einem sich rückwärts erstreckenden Gewindeschafte versehen ist und der Gewindeschafte (8) durch einen offenen Schlitz (31) in einer rückwärtigen Wandung (30) des anderen Schalenteils (3) zur Aufnahme einer drehbaren Mutter (2) hindurchgeht, wodurch eine Relativbewegung der Schalenteile (1, 3) in Längsrichtung dadurch erreicht wird, daß die Mutter (2) auf dem Schaft (8) so gedreht wird, daß sie an der rückwärtigen Wandung (30) anliegt, und wodurch die rückwärtige Wandung (30) in Querrichtung von dem Schaft (8) entfernt werden kann, wenn die Mutter in eine geeignete Position gedreht ist.
2. Mehrzweckmesser nach Anspruch 1, dadurch gekennzeichnet, daß der Schaft (8) genügend lang ist, um sich über die Mutter (2) hinaus zu erstrecken, wenn die Schalenteile (1, 3) bei angezogener Mutter (2) voll zusammengesetzt sind.
3. Mehrzweckmesser nach den vorangehenden Ansprüchen, dadurch gekennzeichnet, daß das andere Schalenteil (3) einen Abschnitt (34) aufweist, der so angeordnet ist, daß er den Schaft (8) im voll zusammengesetzten Zustand quer arretiert, wobei eine freigebende Trennung der Schalenteile (1, 3) erst möglich ist, wenn die Mutter (21) das erste Schalenteil (1) sich hat vorwärts bewegen lassen, so daß das Ende (9)

des Schaftes (8) nicht mehr arretiert ist.

4. Mehrzweckmesser nach Anspruch 3, dadurch gekennzeichnet, daß der Schaft (8) in einem Ausläufer (9) endet, der sich nur von einem Teil des Schaftquerschnittes rückwärts erstreckt, und daß der Arretierungsabschnitt einen transversalen Steg (34) aufweist, der unter dem Ausläufer (9) anordenbar ist.
5. Mehrzweckmesser nach Anspruch 4, dadurch gekennzeichnet, daß der Steg (34) so ausgebildet ist, daß er sich vom Innenumfang eines Schutzrings (32) nach vorn erstreckt, welcher sich wiederum von dem anderen Abschnitt (3) nach hinten, um den Schaft (8) und die Mutter (2) herum, erstreckt.
6. Mehrzweckmesser nach Anspruch 4 oder 5, dadurch gekennzeichnet, daß der Ausläufer (9) eine sich schräg nach oben erstreckende Unterseite (61) aufweist, die so angeordnet ist, daß sie mit einer Kante des transversalen Stegs (34) zusammenwirkt und eine rückwärtig angeordnete zusätzliche Klemmkonfiguration für die beiden Schalenteile (1, 3) bildet.
7. Mehrzweckmesser nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß der Schaft (8) an seinem Ende mindestens einen radialen Vorsprung (23, 24) aufweist, und die Mutter (2) entsprechend mit mindestens einem komplementären radialen Anschlag (21, 22) in einer Stirnseite ausgebildet ist, um eine weitere Drehung und Ablösung der Mutter (2) zu verhindern.
8. Mehrzweckmesser nach Anspruch 7, dadurch gekennzeichnet, daß der Schaft zwei unterschiedliche radiale Vorsprünge (23, 24) aufweist, die aufeinanderfolgend und in Drehrichtung angeordnet sind, mit (a) einem niedrigen sanft konturierten Profil (23), über welches sich der Anschlag (22) bei Ausübung einer vorbestimmten und eine Warnstufe darstellenden Kraft elastisch hinwegbewegen kann, und mit (b) einem erhöhten stufenartigen Profil (24), um eine weitere Drehung und Ablösung der Mutter (2) zu verhindern, wobei dieses Profil zur Ermöglichung des anfänglichen Zusammensetzens in der anderen Richtung sanft konturiert ist.
9. Mehrzweckmesser nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die beiden Schalenteile (1, 3) einstückige Gußstücke sind



und das Gewinde (8a, 8b) an dem Schaft (8) an seinen Seiten entsprechend unterbrochen ist, um ein Entfernen der Schale aus der Gußform zu ermöglichen.

10. Mehrzweckmesser nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß ein Stapel (60) von Ersatzmesserblättern an einer rückwärtigen Stelle des ersten Schalenteils (1) angeordnet ist.

11. Mehrzweckmesser nach Anspruch 10, dadurch gekennzeichnet, daß der Stapel (60) durch ein elastisches Blatt (59) eines Materials in seiner Position gehalten wird, das von einem länglichen Halterahmen (47, 51) nach unten vorbelastet ist, der in dem Handgriff angeordnet ist.

12. Mehrzweckmesser nach Anspruch 11, dadurch gekennzeichnet, daß der längliche Halterahmen (47, 51) einen Schlitz (52) in Längsrichtung mit nach unten gerichteten Kantenabschnitten (51a) zur Erzeugung einer festen bzw. starren Struktur bildet, wobei der Schlitz (52) die Hindurchführung des Stellschalters (41) eines Messerklingenschiebers (42) ermöglicht, der sich von einem Längsschlitz (29) in dem anderen Schaltenteil (3) erstreckt, sowie dadurch, daß der Rahmen (47, 51) um eine Linie nach oben klappbar ist, die sich vor den verstärkten Kanten (51a) befindet, um einen Zugang zu dem Messerklingenstapel (60) zu ermöglichen, wenn die Schalenteile (1, 3) getrennt sind.

13. Mehrzweckmesser nach Anspruch 11 oder 12, dadurch gekennzeichnet, daß ein vorne angeordneter Abschnitt (49) des Rahmens (47, 51) nach unten vorbelastet ist, um das hervorstehende Blatt (43) zu beaufschlagen.

Revendications

1. Couteau à usages multiples du type à manche, comprenant deux parties de boîtier allongées (1, 3) pouvant être assemblées le long de lignes de séparation généralement longitudinales, configurées au niveau d'un emplacement avant (6) (27) correspondant de sorte que le déplacement longitudinal relatif des parties du boîtier peut entraîner leur rapprochement et leur serrage pour former un assemblage servant au logement et à l'immobilisation d'une lame (43) débordant d'une extrémité correspondante; caractérisé en ce qu'une partie du boîtier (1) comporte une tige filetée s'étendant

vers l'arrière, la tige (8) traversant une fente ouverte (31) dans une paroi arrière (30) de l'autre partie du boîtier (3) pour l'ajustement d'un écrou rotatif (2), le déplacement longitudinal relatif des parties du boîtier (1, 3) pouvant ainsi être entraîné en tournant l'écrou (2) sur la tige (8) pour exercer une pression sur ladite paroi arrière (30), et, l'écrou étant tourné dans une position appropriée, la paroi arrière (30) pouvant être enlevée transversalement de la tige (8).

2. Couteau à usages multiples selon la revendication 1, caractérisé en ce que la tige (8) est suffisamment longue pour s'étendre au-delà de l'écrou (2) lorsque les parties du boîtier (1, 3) sont complètement assemblées, l'écrou (2) étant serré.

3. Couteau à usages multiples selon l'une quelconque des revendications précédentes, caractérisé en ce que ladite autre partie du boîtier (3) englobe une partie (34) agencée de sorte à bloquer transversalement la tige (8) lors d'un tel assemblage complet, une séparation libre des parties du boîtier (1, 3) étant ainsi impossible avant que l'écrou (21) n'ait permis l'avance de la première partie du boîtier (1), de sorte que l'extrémité (9) de la tige (8) n'est plus bloquée.

4. Couteau à usages multiples selon la revendication 3, caractérisé en ce que ladite tige (8) se termine dans un ergot (9) s'étendant vers l'arrière, uniquement à partir d'une partie de la section de la tige; et en ce que la partie de blocage comprend une nervure transversale (34) agencée de sorte à s'adapter au-dessus dudit ergot (9).

5. Couteau à usages multiples selon la revendication 4, caractérisé en ce que la nervure (34) est formée de sorte à déborder vers l'avant à partir de la périphérie interne d'une protection annulaire (32) s'étendant à partir de ladite autre partie (3), vers l'arrière et autour de la tige (8) et de l'écrou (2).

6. Couteau à usages multiples selon les revendications 4 ou 5, caractérisé en ce que l'ergot (9) comporte une surface inférieure inclinée vers le haut (61), agencée de sorte à coopérer avec un bord de ladite nervure transversale (34) et à constituer une configuration de serrage auxiliaire située à l'arrière pour les deux parties du boîtier (1, 3).



7. Couteau à usages multiples selon l'une quelconque des revendications précédentes, caractérisé en ce que la tige (8) possède au moins une protubérance radiale (23, 24) au niveau de son extrémité, l'écrou (2) comportant de même au moins une structure de cliquet radial complémentaire (21, 22) au niveau d'une face d'extrémité, pour empêcher une rotation ultérieure et une séparation de l'écrou (2).
8. Couteau à usages multiples selon la revendication 7, caractérisé en ce que la tige possède deux protubérances radiales différentes (23, 24), agencées successivement dans le sens de rotation, avec (a) un profil inférieur à contour lisse (23) sur lequel le cliquet (22) peut se déplacer élastiquement dans les deux directions lors de l'exercice d'une force prédéterminée à niveau d'avertissement et (b) un profil supérieur (24) étagé pour empêcher une rotation ultérieure et une séparation de l'écrou (2), mais à contour lisse pour permettre un assemblage initial dans l'autre direction.
9. Couteau à usages multiples selon l'une quelconque des revendications précédentes, caractérisé en ce que les deux parties du boîtier (1, 3) sont des structures intégrantes moulées par pression et en ce que le filet (8a, 8b) sur la tige (8) est interrompu de façon correspondante au niveau de ses côtés pour permettre un démoulage des parties du boîtier.
10. Couteau à usages multiples selon l'une quelconque des revendications précédentes, caractérisé par le logement d'une pile (60) de lames de rechange en un emplacement arrière de ladite première partie du boîtier (1).
11. Couteau à usages multiples selon la revendication 10, caractérisé en ce que la pile (60) est maintenue en place par une lamelle résiliente (59) de matériau, poussée vers le bas par un cadre de support allongé (47, 51) agencé à l'intérieur du manche.
12. Couteau à usages multiples selon la revendication 11, caractérisé en ce que le cadre de support allongé (47, 51) définit une fente à direction longitudinale (52) avec des parties de bord (51a) dirigées vers le bas pour former une structure rigide, ladite fente (52) permettant le passage du bouton-poussoir (41) d'un curseur de lame (42) débordant d'une fente longitudinale (29) dans ladite autre partie du boîtier (3); et en ce que le cadre (47, 51) peut être plié vers le haut autour d'une ligne devant lesdits bords rigidifiés (51a) pour donner accès à la pile (60) de lames, lors de la séparation des parties du boîtier (1, 3).
13. Couteau à usages multiples selon les revendications 11 ou 12, caractérisé en ce qu'une partie agencée vers l'avant (49) dudit cadre (47, 51) est poussée vers le bas pour exercer une pression sur la lame débordante (43).