

The invention relates to a knife with a hollow handle body, in which a stationary holding and guiding element is housed, which projects out of the end of the handle body, in which a blade mounting is also received displaceably relative to the handle body and is connected via a tension spring to the stationary holding and guiding element.

A knife of this kind is known from DE-B-27 36 395. The knife is lockable in its working position with the blade moved out by an actuating lever projecting on the outside and actuatable by transverse thumb pressure. When the lever is released, the blade mounting together with the blade is retracted into the hollow knife handle by spring tension. This feature is an important safety factor against injury to the user. However, the aspect found to require improvement is the complicated change of blade to be carried out at certain intervals. The process should be quicker to carry out. Additionally, the construction of the known knife is very expensive, so that it can only be used in preferred applications, albeit with considerable advantage in these cases.

In view of these problems, the object of the invention is so to form the knife of the kind mentioned in the introduction that the blade can be changed simply, quickly and safely. Furthermore, a simple, less expensive construction is aimed at so that the knife can be used in many fields of application, in particular for cutting up cardboards.

This object is achieved according to the invention by the features indicated in the characterising part of the main claim. For preferred embodiments of the knife according to the invention, the features of the subclaims are referred to.

According to the invention, the knife is so formed that the handle body is in cross-section a substantially rectangular handle sleeve and has engaging recesses on the end near the blade and remote from the holding and guiding element, into which recesses the blade mounting, consisting of two side elements enclosing the blade between them, projects. Thus the blade mounting is immediately accessible by simply pulling out the holding and guiding element from the handle sleeve, thus permitting the desired rapid blade change.

From US-A-1 521 084, a blade without a tension spring is known whose handle body is formed as a rectangular handle sleeve in cross-section. The known handle sleeve, unlike the subject of the invention, has a base at one end. In addition, the known knife has neither a blade mounting comparable with the subject of the invention nor engaging recesses on the handle body.

According to a preferred embodiment, a side element of the blade mounting has two guide ribs, which are received by sliding into guide grooves of the stationary holding element. Bending of the blade mounting, which might lead to jamming of the blade and hence to the risk of injury, is thereby excluded. Advantageously, one of the guide ribs has a stop at the end, which engages in an elongate aperture inside the stationary holding element. This elongate aperture therefore represents a means of limiting the movement of the blade mounting when the latter is displaced. When the stop bears against the front end of the aperture, the blade is in the working position.

According to a further particularly advantageous embodiment, the second guide groove opens at its rear end in an aperture of the stationary holding and guiding element. This embodiment permits tilting or pivoting upwards of the side part of the blade mounting carrying the guide ribs. When the blade is changed, it is thus no longer necessary to completely release and put down parts of the blade mounting. By tilting

the side part upwards through 90°, the two guide ribs engage in the respective apertures of the holding and guiding element and release the blade, which can then be changed or turned round. After pivoting back the side part, the blade is secured, and after insertion into the handle sleeve, the blade can be used again.

According to an embodiment of the knife according to the invention, the second side element opposite the side element carrying the guide ribs has dowel pins in the displacement direction which engage in bores in the stationary holding element. Thereby the blade change is protected in that, when the side part carrying the guide ribs is tilted, the second side element is locked firmly in position by these dowel pins even if the tension spring acts off-centre. In this position, the stationary holding and guiding element forms a rigid unit with the side part, so that in the case of a blade change, the blade can be laid on the side part without any risk of pivoting away under the action of the tension spring. Preferably, the dowel pins and bores are shorter than the guide ribs of the side element.

According to a preferred embodiment of the invention, one side element of the blade mounting carries, on a projecting plate, a holding projection for the tension spring, which is mounted in a longitudinal groove of the stationary holding and guiding element, which in turn carries on its end the opposite holding projection for the spring. The spring is therefore encompassed on three sides by the holding and guiding element and its function is thereby protected. Advantageously, the holding projection of the side element for the spring is covered by a recess of a plate provided correspondingly on the opposite side element. The spring is therefore prevented from slipping off and secure holding is ensured.

The side elements of the blade mounting preferably carry on the outside profiling in order to facilitate the transition to the

working position. The stationary holding and guiding element is provided on the end on the part projecting beyond the handle sleeve with engaging recesses, which facilitate pulling of the blade out of the handle sleeve. The handle sleeve itself is preferably formed of a substantially rectangular sheet-metal blank and has on its end mutually opposite engaging recesses for the blade mounting.

Further details, advantages and features of the invention will appear from the subsequent description of a preferred embodiment of the knife according to the invention, with reference to the attached drawings, which show individually:

Fig. 1, a side view of the knife in the rest position,

Fig. 2, a diagram of the knife according to Fig. 1 in the extended working position,

Fig. 3, a cross-section through the knife along the section line III-III of Fig. 1,

Fig. 4, a side view of the knife with the handle sleeve removed and with the first side part of the blade mounting removed,

Fig. 5, a side view of the first side part,

Fig. 6, a diagram according to Fig. 4 with the first side part of the blade mounting mounted, and

Fig. 7, a diagram of the knife, partly in section in the blade-changing position.

Figures 1 and 2 show a side view of the knife as a whole, referenced 10, in the rest position on the one hand and in the working position on the other hand.

By means of a construction to be explained in detail below, the blade mounting 11 can be moved out of the handle sleeve 13 with the blade 12 held therein against the tension of a spring 31. The knife 10 is then in the working position shown in Fig. 2. Spring force and self-locking can be so adjusted that the knife remains in the working position during the cutting process - due to the cutting resistance counteracting the spring restoring force - and immediately after being released from pressure (upon completion of the cutting operation), springs back into the handle sleeve 13, which ensures pleasant operation and at the same time the desired high level of safety against injury of the user.

Fig. 3 shows, with the aid of a cross-section diagram, the mounting of the blade 12. A first and a second side element 15 and 16 respectively enclose the blade 12 between them and are engaged with one another with positive locking. Positioning projections 17 provided on the second side element 16 engage in bores in the blade 12 and engage in the first side element 15 with corresponding recesses. The two side elements 15 and 16 are received in a sliding manner by the handle sleeve 13.

The construction of the knife is explained in more detail below with reference to Figures 4 and 5.

Fig. 4 shows the holding and guiding element 18, whose outer contour corresponds substantially to the inner dimensions of the handle sleeve 13 in the region of a main body, so that the holding and guiding element 18 can be displaceably held by the handle sleeve 13 against friction resistance. In the rear region, the holding and guiding element 18 has a shoulder 19, which bears against the rear end of the handle sleeve 13. Engaging recesses 20 facilitate pulling of the element 18 together with the blade mounting 11 out of the handle sleeve 13. An end bore 21 acts as a hanging aperture or for the fixing of a string.

In the main part of the holding and guiding element 18, two mutually parallel longitudinal axial guide grooves 22 and 23 are formed eccentrically. The guide grooves 22 and 23 slidably hold freely projecting guide ribs 24 and 25 respectively of the first side element 15 of the blade mounting 11. The guide rib 24 has a stop 26 at its end, which stop engages in a longitudinal aperture 27 on the bottom of the groove at the rear end of the guide groove 22. This engagement limits the displacement of the blade mounting 11 between its rest and working position explained with the aid of Figures 1 and 2.

The opposite guide groove 23 of the element 18 has at its end, on the bottom of the groove, a longitudinal, but slightly shorter aperture 28. The aperture 28 can hold the end of the guide rib 25 if the side element 15 is pivoted open, as will be explained in more detail below with reference to Fig. 7.

The holding and guiding element 18 is further provided in the displacement direction of the blade mounting 11 with a central longitudinal groove 29, which has at its rear end a holding projection 30 for the tension spring 31. The tension spring 31 is held by the longitudinal groove 29.

The opposite end of the tension spring 31 is held on a projection 32, which is carried by a plate 33 located centrally on the side facing the holding and guiding element 18 of the second side element 16. In a corresponding plate 34 of the opposite side element 15 is a recess 35, which in the assembled state of the knife encompasses an axial projection of the projection 32 of the side element 16, so that the lug of the tension spring 31 is securely held.

The second side element 16 has a slightly eccentrically located longitudinal recess for receiving the blade 12. Positioning projections 17 of the side element 16 already mentioned in connexion with Fig. 3 engage through

corresponding apertures of the blade 12 and are covered by recesses 35 of the first side element 15. The side element 15 is provided with an eccentric longitudinal projection, which engages in the longitudinal recess of the opposite side element 16, so that the blade 12 is held and fixed with positive locking. Both side elements 15 and 16 carry at a front corner a respective chamfer 36 and 37, beyond which the cutting edge 44 of the blade 12 projects, so that the blade 12 can be applied to the material to be worked.

As is clear from Fig. 4, the second side element 16 carries on the side facing the holding and guiding element 18 dowel pins 39 and 38 in the direction of motion x (longitudinal axial direction), which engage in corresponding bores 40 and 41 in the holding and guiding element 18. By virtue thereof and due to the tension of the spring 31, the second side element 16 is fixed to the holding and guiding element 18, i.e. is also fixed against tilting due to the effect of the tension spring 31, even when the first side element 15 is removed for changing of the blade 12.

Fig. 6 shows the holding and guiding element 18 with inserted tension spring 31 and with mounted side element 15. The blade 12 is now enclosed between the two side elements 15 and 16. On the outer face, the two side elements 15 and 16 have profilings 42 to improve the engagement when the knife 10 is actuated.

The handle sleeve 13 is formed of a substantially rectangular sheet-metal blank, appropriately bent into shape. As is clear from Figures 1 and 2, it carries laterally in the region of the blade mounting 11 mutually opposite engaging recesses 43, through which the profiling 42 of the blade mounting 11 can be grasped. The handle sleeve 13 can be provided with a layer of lacquer or with any form of impression.

Fig. 7 shows the holding and guiding element 18 with

pivoted-open side element 15 for changing the blade 12. The outer end of the guide rib 25 and correspondingly the end (not visible here) of the guide rib 24 engage through the apertures 27 and 28 respectively in the guide grooves 22 and 23 respectively of the holding and guiding element 18. The side element 15 is thereby held during the blade change, so that it does not have to be put down. On completion of the blade change, the side element 15 is again pivoted back and bears virtually in a constrained manner, enclosing the blade 12, on the second side element 16, the recess 35 encompassing the holding projection 32 for the corresponding spring lug of the tension spring 31.

It should again be mentioned at this point that the above description is only by way of example.



Claims

1. Knife with a hollow handle body (13), in which a stationary holding and guiding element (18) is housed, which projects out of the end of the handle body (13), in which a blade mounting (11) is also housed displaceably relative to the handle body and is connected via a tension spring (31) to the stationary holding and guiding element (18), characterised in that the handle body is formed as a substantially rectangular handle sleeve (13) and has on its end near the blade and remote from the holding and guiding element (18) engaging recesses (43), into which the blade mounting (11), consisting of two side elements (15, 16) enclosing the blade (12), projects.

2. Knife according to claim 1, characterised in that the first side element (15) has two guide ribs (24, 25) which are received by two guide grooves (22, 23) inside the stationary holding and guiding element (18).

3. Knife according to claim 2, characterised in that the first guide rib (24) has at its end a stop (26), which engages in a longitudinal aperture (27) inside the stationary holding and guiding element (18).

4. Knife according to one of the preceding claims, characterised in that the second guide groove (23) opens at the end in an aperture (28) of the holding and guiding element (18).

5. Knife according to one of the preceding claims, characterised in that the second side element (16) of the blade mounting (11) has dowel pins (38, 39) in the displacement direction (x), which engage in corresponding bores (40, 41) in the stationary holding and guiding element (18).



6. Knife according to claim 5, characterised in that the dowel pins (38, 39) and the bores (40, 41) are shorter than the guide ribs (24, 25) and the guide grooves (22, 23).

7. Knife according to one of the preceding claims, characterised in that the first side element (16) has a holding projection (32) mounted on a projecting plate (33) for the tension spring (31), which is mounted in a longitudinal groove (29) of the stationary holding and guiding element (18), in which at the end the opposite holding projection (30) for the tension spring (31) is located.

8. Knife according to claim 7, characterised in that the holding projection (32) is covered by a recess (35) of a plate (34) provided correspondingly on the opposite side element (15).

9. Knife according to one of the preceding claims, characterised in that the side elements (15, 16) have external profiling (42).

10. Knife according to one of the preceding claims, characterised in that the handle sleeve (13) is formed of a substantially rectangular sheet-metal blank.