

Mounting Device

The invention relates to a mounting device, which forms an interface between a device, in particular a weapon, and an accessory device, with two or more mainly parallel spaced pins, which are preferably attached to the accessory device, and two or more bore holes as sockets for them, each of which are equipped with an undercut as well as with a locking device, preferably cushioned by a spring, which is attached to one of the pins and has a handle, while another pin is preferably fixed (preamble of claim 1).

In conventional guns with a steel housing, it is common to affix a mounting device, the so-called "telescopic sight mounting," on the steel housing for the mounting of a telescopic sight on the weapon. This type of telescopic sight mounting is often very complicated and generally not very durable. Cheaper assemblies, e.g. the so-called "extension mount," in which clamping jaws are clamped on a prism rail, cannot sufficiently reproduce their position, which they assume after mounting on the gun, after being removed and reattached again.

In military weapons, the problems concerning mounting are even more dramatic, because military assemblies

- must withstand considerable impacts without shifting positions (mounting e.g. on a machine gun, which in turn is installed on an all-terrain vehicle),
- must transfer great forces (if they need to connect e.g. not just a light telescopic sight, but rather a heavy combat lens and/or combat electronics or a second weapon with the first weapon in an

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exact and fully reproducible manner), but nevertheless
- should be simple, cost-effective, small in size and comfortable to attach and detach.

It turns out that these assemblies should be called "interfaces", which must adopt a strictly defined position with respect to each other in general use in all types of devices, which should permit simple detachment and reattachment, without ever compromising the defined position assignment in any way.

A military telescopic sight is known (in sharpshooter guns from the former GDR), in which two pins are attached to the telescopic sight, while one pin socket is provided on the gun both in front and behind the lock. When the telescopic sight is held diagonal to the bore axis, the front pin is placed in its socket, and the telescopic sight is then pivoted by 90° until it is parallel to the bore axis. A projection of the front pin thereby reaches under an undercut in the front socket, and the rear pin locks laterally into the rear socket. For detachment, the activation of a handle on the rear socket releases the rear pin. The telescopic sight is again pivoted by 90° and can then be lifted out of the front socket.

As easy as this mounting may seem, it is only suitable in one particular case: the exact integration of all parts is required, which nearly renders impossible in particular the interchangeability of the telescopic sight or accessory devices. In particular, tolerances can hardly be balanced. Furthermore, the pins have a somewhat large separating distance, which is determined by the design of the gun but contributes to the minimization of any tolerances. The

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sockets are thus individually attached to the weapon, the parts of which must be massive enough to handle this attachment.

The object of the invention is to find a mounting device, in which the aforementioned disadvantages are at least partially reduced.

As a solution for this object, it is suggested that a mounting device, as initially outlined, is characterized in that

- the undercuts of two bore holes are either designed on the sides that are turned away from each other and/or on those facing each other,
- the undercuts of the bore holes are sloped,
- the pins carry heads designed to be compatible with the sloped undercuts, and
- the one of the pins can be moved against the force of the locking device, preferably a spring, axially in the direction of its head and turned by means of the handle, whereby the head of this pin only extends radially beyond this on one side, so that when this pin is turned by means of the handle the head of the compatible design pushes against the force of the spring on the undercut of the associated bore hole.

As already noted, the mounting device is designed in particular for the attachment of accessory devices to a weapon, but can also serve for the exact positioning and separable joining together of all types of devices.

The term "accessory device" is preferably understood to mean a combat array processor, target scope, or target electronics (e.g. telescopic sight, night target device, laser target device) or a second weapon (e.g. accessory grenade launcher, rapid fire gun).

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A sloped undercut is understood to mean an enlargement of the bore-hole diameter that is present on the outside mouth of the bore hole, whereby the term "sloped" describes a generally continuous transition (conical, parabolic, hyperbolic, bossed or otherwise) from the inner to the outer mouth.

"Handle" is understood to mean an actuation device for power admission, like a lever, but it can also be a servo-motor or suchlike, if necessary.

"Head" is understood to mean a radial end projection of the pin. In special cases, the pin can also extend beyond the head.

The two bore holes are preferably designed on the device or attached to it, preferably to a weapon (as a rule, a hand gun), while the pins are assigned to the accessory device, just like the handle assigned to one of the pins.

The bore holes (the undercuts remain unconsidered) preferably have a center distance that is smaller than the center distance of the pins (the heads of which remain unconsidered). It is not required that the pins be placed in the bore holes in the direction of their axes. Rather, it is preferred that the opposite center distance of the bore holes and that of the pins do not match, and instead is coordinated such that the center distance of the pins is a bit larger than that of the bore holes: thus, the fixed pins are inserted into the associated bore hole in a sloped manner and the heads are hooked behind the undercut. The bore hole must be large enough to let the head of the pin pass through if it is slightly sloped. The accessory device, which usually carries the pins,

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is then pulled in the direction of the fixed pin, until the movable pin can engage with its associated bore hole. The head of the axial and pivotable pin must hereby have a pivoting position such that this movable pin can now also engage with its associated bore hole. Both pins now sit in their bore holes.

Now the movable pin is turned by means of the handle and pushes against the slant of the undercut. The fixed pin with its head thereby presses against the undercut of the associated bore hole. When the handle is turned further, the movable pin is moved axially against the force of the spring, since its head would otherwise not be able to be turned further: the head, which lies firmly against the undercut, in order to do this, moves axially against the force of the spring. When turned further, it thereby dips a bit into the associated bore hole until it has reached its final position.

The term "compatible" hereby means that the undercut and the head must be designed such that the movement of the pin described above is possible. In practice, the sloped surfaces on the undercut and on the head are designed complementarily or, as described later, even better "almost complementarily."

When using a spring, the spring finally provides for the constant pressure, with which the pins are pushed into the bore hole. The preferably fixed pins are thereby pressed on via the slant of the undercut, while the movable pin seeks to force the bore holes open via the undercut and is otherwise pressed on by the strong spring.

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It is thereby preferred to design the surfaces around the pins complementarily to the surfaces around the bore hole, approx. in the form of a level surface arranged perpendicular to the respective axes.

In the end, it does not matter how far the movable pin may or may not have moved axially. The only thing that is important is that it transfers the force exerted by the locking device, in particular the spring, via its head to the associated undercut. When using a spring, the mounting device according to the invention is suitable for accommodating considerable tolerances, in contrast to known pin assemblies, which would have to be fine-tuned. For this reason, the mounting device according to the invention is particularly suited for a variety of accessory devices and ensures their secure attachment.

In the case of undercuts that are turned away from each other, the associated bore holes themselves can be designed in a thin-walled housing of a weapon, since the bore holes are pulled apart by the attached accessory device. A sheet-metal wall, which runs in a straight line between the bore holes, can accommodate very high forces between these two bore holes without deforming.

Both bore holes can be designed symmetrically to each other, i.e. by means of the same tools. This enables a reduction in the price of production.

The heads can sit flat in the undercuts. This ensures that the surfaces that are in contact with each other wear away as little as possible. However, great production accuracy and meticulous

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cleanliness are both required. In particular, the complementary, engaging surfaces can have no corrosion or contamination.

In order to avoid such problems, one embodiment of the invention suggests that each of the heads sits on the undercuts along two lay-on lines (claim 2). Thus, the pin with its head theoretically lies on the undercut only in duplicate line tangencies, which ensures the best reproducibility of the position of the pin relative to the bore hole.

One example should explain this geometry in greater detail; a radial section (in terms of the bore hole and the pin) is observed in the area of the undercut once the mounting device has been completely installed:

The bore hole has a circular circumference, which is interrupted by a circular arc with a smaller radius extending towards the outside. The transition from the circle with the larger radius to the circular arc with the smaller radius theoretically occurs in an edge. Each edge can be broken by a tangent placed on both circles. The wrap angle of the segment of the circle with the larger radius is larger (it is e.g. 240°) than the wrap angle of the segment of the circle with the smaller radius (this is e.g. 120°).

The pin has a circular cross-section, and the head as well. The radius of the pin is slightly smaller than the larger radius of the bore hole and much larger than the smaller radius of the bore hole. Both radii of the pin and the head have the same center point and the radius of the head must be larger. The head spans across an angle range, which is measured such that, on one hand, when

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the accessory device is locked, two almost axially parallel lay-on lines of the head can form on the sloped undercut and that, on the other hand, the head for installing the accessory device on the device can engage with the circular section of the bore hole with the larger radius (e.g. the angle range is approx. 60°).

When the mounting device is finally installed, the head lies firmly in the undercut in the radial direction, namely along the aforementioned edges; in practice, along two narrow lay-on stripes diagonal to the aforementioned tangents.

A small separation distance develops on both sides of these lay-in stripes between the surfaces of the undercut and the head, so that the contamination or slight corrosion can be cleared towards this separation distance and does not stay put, where the accuracy of the position reproduction would then be compromised.

The pins can each be attached to the accessory device individually, e.g. by means of two special rings on a telescopic sight. However, it must then be able to withstand considerable forces, which are applied to the pins after installation (in this case, force of pressure).

In order to resolve this problem, an embodiment of the invention suggests that the pins sit in one, single special component (claim 3). This component can be made of steel, aluminum, a carbon-fiber composite material, etc. and intended for installation on an accessory device. In any case, it has a bend-resistant component, into which the two pins are inserted and which, despite the forces affecting the pins, is stable enough to keep from becoming deformed.

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The respective accessory device only needs to be able to carry this component, but does not need to receive any forces besides its own mass force. It is also possible to complete already existing accessory devices by mounting the named mounted part. The special component can thereby be specially formed, for example with a cylindrical cavity into which the housing of a telescopic sight can be glued.

The bore holes can also be designed e.g. in the housing of a rapid-fire gun, the sheet-metal of which is flanged in around the bore holes in order to form the undercuts. However, it is preferred that the bore holes sit in one, single, separate component (claim 4). The bracket, which connects the two bore holes, hereby accommodates the occurring tractive forces. If such a bracket, e.g. a steel strip, is placed, e.g. welded, on the housing of a weapon, then the housing wall closes the bottom side (side of the undercuts) of the bore holes so that dirt can at best collect in them but cannot get into the mechanism of the gun.

However, this type of closure of the bore holes can also be incorporated into the component. Thus, it is preferred in accordance with one embodiment of the invention that the bore holes of the component on the side of the undercuts are at least closed after the installation of the component (claim 5). One sheet can be placed on the component, which closes the bore holes. In this manner, it is avoided that any moisture threatens a corrosion-endangered housing. Naturally, the bore holes can be open towards the inside of the housing (since e.g. a scope is always mounted on the gun in the operating state and the bore holes are thus closed on the

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outside), which has the advantage of an easier cleaning of the bore holes.

If a thin-walled plastic housing is used, then the component already requires at least one anchoring point, which stands in a fixed position arrangement with the barrel of the gun. The covering of the bore holes prevents dirt or sand that has made its way into the bore holes from being pressed into the plastic housing wall.

For its pivot and translation movement, the movable pin can simply be guided in a transition bore hole. It is also possible to insert a chuck made of bearing metal or suchlike into this bore hole, in order to facilitate movement without needing to put up with play.

However, exactly the opposite is preferably suggested: it is not the play that should be made as small as possible, but rather it is suggested that the accessory device has two bearings for guiding the movable pin such that, when the accessory device is installed, the pin in each bearing overlies two mainly axially parallel lay-on lines, whereby each of the two lay-on lines of the bearing facing the device are offset by mainly 180°, on one hand, towards the two lay-on lines of the bearing turned away from the device and, on the other hand, towards the two lay-on lines on the undercuts in the bore hole (claim 6).

If the movable pin is turned such that its head lies against the undercut and moves axially against the force of the spring, then the head preferably sits on two lay-on lines, while the pin is reinforced on the opposite-lying side on two lay-on lines, which are located in the bore hole in one

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of the two fork branches. The other two specified lay-on lines are in turn located opposite these two lay-on lines in the bore hole of the other fork branch. A strictly defined position of the pin is thus produced, when it engages with the associated undercut.

The movable pin covers an axial distance against the effect of the spring. The spring must thereby be designed such that it preserves the fit of the mounting device, even if it is exposed to considerable mass forces. This can lead to considerable difficulties, above all the case that the head of the pin does not immerse deep enough into the associated bore hole, so that the head of the pin can progress along the undercut. Thus, it is preferred here that the spring is pretensioned and is only released during the turning of the pin if the head of the associated pin is already partially located over the undercut of the associated bore hole (claim 7).

The pin is thus always located in a position, in which it is already loaded by the spring such that it does not need to perform or only needs to perform a small axial movement during turning. The spring is released towards the end of the turn so that sufficient initial force of the spring is ensured under all circumstances.

The handle could be a lever, which is attached to the movable pin in a radially projecting manner. The solution with the lever projecting from the pin is preferably further developed in that, in the case of a handle that is radially attached to the pin, the lever overlies a guide running along a radial plane over the largest portion of its pivoting that is only omitted in the end area of the

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pivoting when the head is located over the undercut (claim 8). A simple arrangement is thus provided in order to ensure that the pin is fully and freely loaded by the spring, shortly before it has reached its final position.

The larger the pivoting range of the movable pin and thus the handle, the wider the head of this pin can be. It is thus suggested that the pivoting range of the movable pin is approx. 180° (claim 9).

Due to the spring forces, the friction to which the head of the movable pin is exposed is quite great, so that the handle remains in the assumed position. However, it is preferred that the handle is immobilized in a position, in which the movable pin is fully loaded by the spring (claim 10). This immobilization is an additional safeguard that ensures that the handle remains in position when the mounting device is installed. At the same time, this position is an indicator that the mounting device is and assembled and mounted.

When permanently mounted, the immobilization can be created by a screw, which immobilizes the handle. It is, however, preferred that the immobilization is designed as a stop device (claim 11). There is thus hardly any noteworthy delay when immobilizing and releasing the handle. It is nonetheless reliably immobilized in its locked position.

The stop device can be a spring-loaded notch. However, an advantageous embodiment of the invention exists in that the stop device is designed as a notching on the component carrying the pin, with which the slightly springy handle and/or the handle loaded by the spring engages (claim 12). Since the handle must overcome considerable forces when the pin is turned, it must be quite

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long and might thus be deformable by the spring. But the associated pin also assumes its final position through the effect of the spring, so that the handle firmly connected to this pin is able to perform a spring-loaded diagonal movement when it is exposed to the full effect of the spring. In any case, this type of notching has proven that it holds the handle in position by means of spring forces but does not require its own component.

The spring could be a powerful spiral spring, such as the valve spring of a combustion engine. It is preferred that the spring is designed such that it can supply great spring force in a small installation space (claim 13). Such springs can be a disk spring bundle, a coil spring, a diaphragm element, etc. For example, disk springs can be adjusted based on their special characteristics such that the spring constant increases when the handle assumes its final position.

In an alternative embodiment, the spring is designed as one piece with the associated pin, preferably in the form of a slotted pin or tube (claim 14). The spring bundle or the spring is thus a captive part of the pin and does not require its own component.

In accordance with another aspect of the invention, a mounting device is created (claim 15), which forms an interface between a device, in particular a weapon, and an accessory device, with two spaced pins and two bore holes as sockets for them, each of which is equipped with an undercut as well as with a spring-loaded locking device, which is attached to one of the pins and has a handle, while the other pin is preferably fixed. The undercuts of the two bore holes are designed and sloped on sides facing away from each other and/or on the sides facing each other.

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The pins bear heads that are designed compatible to the sloped undercuts. One of the pins can be moved against the force of the locking device in the direction of or away from the other pin using the handle so that, when this pin is moved by means of the handle, the head with the compatible design is released from the sloped undercut of the associated bore hole against the force of the locking device and pushes up against the sloped undercut when the handle is released due to the force of the locking device.

The bore holes are preferably designed in a Picatinny rail or another interface common for weapons, whereby the user advantageously has both mounting options as alternatives or in parallel.

The accessory device preferably comprises a Picatinny rail or another interface common for weapons, whereby, for example, "old" installable accessory devices can only be attached to the weapon via such Picatinny rails or, for example, worn-out (made of very light or cheap material) Picatinny rails can be replaced very quickly.

The invention thereby creates a mounting device or an interface, which gets by with just a few, robust parts and produces a reliable mounting, in which high forces can be transferred and has in particular the following advantages:

- the mounting device or "interface" is free of play after each mounting and sits in the same position (self-adjusting and reproducible or attachable in an exactly repeatable manner),

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- it just has a few, simple parts, is economical, is, above all, easy to manufacture on the weapon side and stresses the weapon structure as little as possible and, as a rule, only when pulled (thin housing walls then remain dimensionally stable),
- it is inconspicuous and, when the accessory device is mounted, protected from contamination at least on the weapon side, is easy to clean when the accessory device is demounted and permits single-lever operation, i.e. when an accessory device is attached, which can be operated with the hand that is holding the weapon or the accessory device.

The subject matter of the invention is explained in greater detail using the exemplary embodiments and with reference to the attached schematic drawing. The drawing shows the following:

Fig. 1 shows a bottom view of a first exemplary embodiment of the mounting device according to the invention, in its permanently mounted state,

Fig. 2 shows an illustration as in Fig. 1, but in an unlocked state,

Fig. 3 shows an illustration as in Fig. 1, but in a detached state,

Fig. 4 shows a side view of the mounting device in Fig. 2, in a partially cut state,

Fig. 5a shows a detailed top view of the bore holes in the device,

Fig. 5b shows an enlarged detailed view of the bottom of one of the bore holes shown in Fig. 5a,

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Fig. 5c shows a longitudinal cross-section through the bore hole shown in Fig. 5b,

Fig. 6 shows a sectional view of another exemplary embodiment of the movable pin,

Fig. 7a and b show a schematic view of an alternative embodiment of the device with more than two bore holes,

Fig. 8 shows a longitudinal sectional view of a second exemplary embodiment of the mounting device according to the invention, in a permanently mounted state,

Fig. 9 shows a diagonal top view of the weapon-side component of the mounting device, which is integrated in a Picatinny rail, and

Fig. 10 shows a side view of the mount-side component of the mounting device, which bears a Picatinny rail.

Figures 1 through 5 shows the first exemplary embodiment.

The mounting device consists of a weapon-side component 1 and an accessory-device-side component 3, which can be assembled together or separately and can be permanently attached to a weapon or to a device with means that are not shown here.

The weapon-side component 1 has a smooth mounting surface 5 and is penetrated by two bore holes 7, 9, which are perpendicular to this surface and thus parallel to each other. These bore holes 7, 9 have a non-circular section and are designed the same, but are mirror images of each other.

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Each bore hole 7, 9 has a cylindrical section 11 with a radius R (not shown), which is expanded by an axially parallel, eccentric section 13, which has a radius r (not shown). Hereby, $R > r$. Both bore-hole sections 11, 13 are connected by tangent surfaces 17, which preferably involve an angle of approx. 30° (to the center axis) in the direction of the section 13. The smaller bore-hole sections 13 each lie on the side of the bore-hole section 11, which are turned away from each other. The bore holes are thus symmetrical to each other.

On the bottom side of the weapon-side component 1 facing the observer (Fig. 1 through 3 and 5b), the smaller bore-hole section 13 is countersunk conically, so that undercuts 15 result, which taper out into the tangent surfaces 17.

The bottom side of the bore holes 7, 9 facing the observer can be covered.

The accessory-device-side component 3 has a fixed pin 19 and an axially movable and pivotable pin 21. Both pins 19, 21 are mainly parallel to each other.

Each pin 19, 21 has a shaft 27, 29 as well as a head 23, 25 on its free end. The radius of each shaft 27, 29 that is cylindrical is greater than r and smaller than R . In the case of fixed pin 19, the head 23 extends from this shaft 27 like a conical frustum, the cone angle of which is the same as the conical countersink of the bore hole 7, 9. The head 23 expands from the lower (side facing the observer) end of the pin 19.

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If the pin 19 sits in the associated bore hole 7 when the mounting device when is completely installed (Fig. 1), then the conical-frustum-shaped head 23 sits on the undercut 15 along two lay-on lines, which are the generatrices of the undercut and the conical-frustum surface.

The head 25 of the movable pin 21 has the same geometrical designed as the head 23 of the fixed pin 19; however, it is still beveled on the edge, namely along two planes, each of which contain a generatrix of the pin 21 and together form an angle of 90° . This angle is rounded along the perimeter of the pin 21.

The pin 21 can be turned 180° by means of a handle 31 and namely such that, when the handle 31 (Fig. 2, 3, 4) sticks out, the head 25 is located in the position, in which it is turned towards the fixed pin 19 and, when the handle is lying down (Fig. 1), is facing away from the fixed pin 19. In the last-mentioned state, the head 25 meshes with the undercut 15 of the associated bore hole 9.

The engagement here also takes place along two generatrices of the undercut 15 of the head 25.

The separation distance of the bore holes 7, 9 is now not the same as the separation distance of the pins 19, 21, but is rather a bit smaller. But, since the head 25 assumes its end position, it must move a bit towards the observer in Fig. 1. This occurs by pressing together the disk-spring package 33.

When the mounting device, starting from the position of Fig. 2, is assembled and reaches the position in Fig. 1, then the handle 31 pivots from the position in Fig. 2 by 180° into the position in

Fig. 1. The handle 31 thereby engages with the notching 37.

This engagement is achieved through the self-springing of the handle 31 and mainly through the tangential deviation of the pin 21 against the effect of the disk-spring package 33. The pin 21 is namely positioned with play and has a recess in the bearing 35 such that it only sits along two generatrices of the bearing 35, when the head 25 is in the position in Fig. 1. This is now explained in greater detail with reference to Fig. 5. The accessory-device-side component 3 is forked on the end accommodating the movable pin 21 and has a fork branch 51 facing away from the device-side component 1 and a fork branch 53 facing the component 1. Each fork branch 51 and 53 is provided with a bore hole that accommodates the pin 21. The bore hole in the fork branch 51 facing away from the device-side component 1 has in principle the same shape and alignment as the bore hole 9 in the device-side component 1, however without having an undercut. The bore hole in another fork branch 53 also has in principle the same shape, but is turned by 180°. Overall, the bore holes with the large radius R and the small radius r thus alternation from the device-side component 1 in the direction of the device-side device 3. When the accessory device is mounted, the pin 21 lies in each bore hole along two axially parallel lay-on lines, whereby, from bore hole to bore hole, the two lay-on lines are offset mainly by 180°.

The handle 31 is guided out of the device-side component 3 by a radial slit 39. This radial slit 39 is confined by a radial surface 41, on which the handle 31 sits as a result of the effect of the spring package 33 (Fig. 2, 3, 4). Only when the handle 31 has almost reached its final position (Fig. 1), it runs over a recess 43, via which a larger spring travel is given to the spring packet 33.

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and the handle 31 no longer confines the spring travel. Thus, the spring packet always remains pretensioned.

The marksman always has the handle 31 in his line of sight and can react immediately should it not have engaged with the notching 37.

The accessory-device-side component 3 also has overlapping surfaces 45, which run complementarily to the mounting surface 5 and ensure the good seating of components 1 and 3 on each other.

Fig. 6 shows an alternative design of the pin 21 with spring packet 33' connected as one piece.

Fig. 7a and b show a second exemplary embodiment, in which several bore holes 7', (in this case, 5 bore holes) are provided behind each other on the weapon-side component 1, each of which has sloped undercuts 15 and 15' on the sides facing each other. A bore hole 7' thus has two undercuts 15 and 15' in the direction of their neighboring bore hole 7'. Even the outer-lying bore holes 7' have undercuts 15 and 15', which face the outside, i.e. face away from each other. The two pins 19 and 21 of the device-side component 3 can now be inserted into any two, preferably neighboring, (but if necessary even some intermediate bore holes 7') bore holes 7', whereby the device-side component 3 can be mounted in different positions on the weapon-side component 1. Through the "double-sided" design of the undercuts 15 and 15' in the individual bore holes 7', the two bore holes 7' with inserted pins 19 and 21 are stressed either with pull (Fig. 7a) or with push (Fig. 7b) in the case of the corresponding separating distance of the pins 19 and 21.

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Naturally, more than one fixed and/or movable pin 19 and 21 can be provided, which are accommodated in several bore holes 7' when the component 3 is mounted on the device side. For example, a triangle of forces can be stretched with two fixed and one movable pin, a parallelogram of forces with a number that is correspondingly higher, etc.

Fig. 8 shows a third exemplary embodiment, in which, in contrast to the first exemplary embodiment shown in Figures 1 through 5, the mounting device is not locked and unlocked by turning but rather by pushing the movable pin. Figure 8 shows components similar to those in Figures 1 through 5 with the same reference numbers. For their description, refer to the above description of the first exemplary embodiment. Only the components that differ from the first exemplary embodiment are described here.

The mounting device comprises a pin 60 that can be moved in its longitudinal direction, which - guided by a recess 61 - can be pushed towards and away from the fixed pin 19. The movable pin 60 is integrally connected with a guiding rod 62 that sticks out radially, which is guided in a recess 63 and is pretensioned by a spring device 64 in the direction away from the fixed pin 19. The top end 65 of the movable pin 60 sticks out a bit from the top side of the mount-side interface, whereby this projecting end 65 serves as a handle for operating the mounting device. As shown in Fig. 8, in the second exemplary embodiment, the bore holes 7 and 9 in the weapon-side component 1 and the heads 23 and 25 of the respective pins 19 and 21 in the accessory-device-side component 3 are designed geometrically like the bore holes 7 and 9 and heads 23 and 25 of the first exemplary embodiment; in particular, the head 25 of the movable pin 60 is beveled on the

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side facing the pin 19. In the second exemplary embodiment, the head 25 of the movable pin 60 can, for example, be designed exactly like the head 23 of the fixed pin 19, thus as a circumferential conical frustum.

In order to insert the accessory-device-side component 3 into the weapon-side component 1, a user pushes the handle 65 against the force of the spring device 64 in the direction of the fixed pin 19 and inserts the two pins 19 and 60 into the corresponding bore holes 7 and 9. Then he releases the handle 65, whereby the pin 60 moves away from the fixed pin 19 due to the spring force. The respective slants of the heads 23 and 25 thereby push on the undercuts 15 of the bore holes 7 and 9 and pull the accessory-device-side component 3 to the weapon-side component 1. At the same time, the two pins 19 and 60 are tensioned against each other under the undercuts 15. To open the mounting device, the user only needs to move the handle 65 in the direction of the fixed pin 19, whereby the heads 23 and 25 are released from the undercuts 15, and can then demount the accessory-device-side component 3 of the weapon-side component 1.

The two mounting devices in accordance with the first and the second exemplary embodiments generally have the same applications. However, since the spring device 64 is preferably dimensioned with a lower spring force, in order to still ensure a light manual opening of the handle 65, the second exemplary embodiment is preferably suitable for lighter accessory-device-side components 3. Alternatively, a lever mechanism for pushing the lever 65 could also be provided, whereby the spring device 64 can be designed to be stronger and the mounting device can also hold heavier accessory-device-side components 3.

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Alternatively, the third exemplary embodiment can also be designed such that the moveable pin 60 is pretensioned in the direction of the fixed pin 19. For this, the undercut 15 of the bore holes 7 and 9 would have to lie opposite each other or each of the bore holes 7 and 9 would have to have two undercuts 15, as shown in Figures 7a and b.

In all of the exemplary embodiments, it can be advantageous to install the mounting device such that the fixed pin 10 lies toward the back of the weapon, the movable pin 21 or 60 thus in the front in the direction of fire and is tensioned for locking the mounting device in the direction of the fixed pin 19, which places pressure on the weapon housing accommodating the two bore holes 7 and 9. The locking spring 33 or 64 is thus not stressed during a shot. To make mounting easier and for more freedom of design, the handle 31 in the first exemplary embodiment can be decoupled from the locking mechanism 29 and 33 such that it no longer makes any sort of stroke movements.

Fig. 9 shows the integration of bore holes 7 and 9 into a Picatinny rail 66; the Picatinny rail 66 thus assumes the function of the weapon-side component 1. The ridges 67 running diagonal to the longitudinal direction of the Picatinny rail 66 and accommodating bore holes 7 and 9 are thus designed to be wider in the longitudinal direction. Naturally, the wider design depends on the dimension of the bore holes 7 and 9 and the width of the ridges 67.

Fig. 10 shows the integration of the Picatinny rail 68 into the accessory-device-side component 3. As can be seen in this figure, the Picatinny rail 68 is permanently connected to the accessory-device-side component 3 via two spacers 68 (preferably integrated with it) and runs parallel to

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its longitudinal direction.

Naturally, the mounting device can be used in accordance with the above exemplary embodiments to connect any two functional components. For example, an assault, a shoulder rest, an additional magazine, etc. can be connected to the weapon in a detachable manner. In the exemplary embodiments shown in Figures 9 and 10, other interfaces common for weapons can also be provided as an alternative to the Picatinny rail 66 or 68. Another such common interface, instead of the Picatinny rail 68 (same as Fig. 10), can also be mounted to a Picatinny rail 66 that is permanently mounted to a weapon (Fig. 9).

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Patent Claims

1. Mounting device, which forms an interface between a device (1), in particular a weapon, and an accessory device (3), with two or more mainly parallel, spaced pins (19, 21), which are preferably attached to the accessory device, and two or more bore holes (7, 9) as sockets for them, each of which is equipped with an undercut (15), as well as with a locking device (25, 15), which is preferably spring-loaded with a spring (33) and which is attached to one (21) of the pins (19, 21) and has a handle (31), while another pin (19) is preferably fixed, characterized in that
 - the undercuts (15) of two bore holes (7, 9) are designed on the sides facing away from each other and/or on the sides facing towards each other,
 - the undercuts (15) of the bore holes (7, 9) are sloped,
 - the pins (19, 21) bear heads (23, 25) designed to be compatible with the sloped undercuts (15) and
 - one of the pins (21) can be moved against the force of the locking device (25, 15), preferably a spring (33), axially in the direction of its head (25) and can be turned by means of the handle (31), whereby the head (25) of this pin (21) only projects beyond it radially on one side, so that when this pin (21) is turned by means of the handle (31), its head (25) with the compatible design pushes against the force of the locking device (25, 15) on the sloped undercut (15) of the associated bore hole (7, 9).

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2. Mounting device in accordance with claim 1, characterized in that each of the heads (23, 25) sit on the undercuts (15) along two lay-on lines.
3. Mounting device in accordance with one of claims 1 or 2, characterized in that the pins (19, 21) sit in a single, separate component (3).
4. Mounting device in accordance with one of claims 1 through 3, characterized in that the bore holes (7, 9) sit in a single, separate component (1).
5. Mounting device in accordance with claim 4, characterized in that the bore holes (7, 9) of the component (1) are closed on the side of the undercuts (15) at least after mounting of the component (3).
6. Mounting device in accordance with one of claims 3 through 5, characterized in that the accessory device (3) has two supports for guiding the movable pin (21), such that the pin (21), when the accessory device (3) is mounted, lies along two mainly axially parallel lay-on lines in each support, whereby the two lay-on lines of the support facing the device (1) are each offset by mainly 180°, on one hand, towards both lay-on lines of the support facing away from the device (1) and, on the other hand, towards the two lay-on lines on the undercuts (15) in the bore hole (9).
7. Mounting device in accordance with one of claims 1 through 6, characterized in that the spring (33) is pretensioned and is only released during the turning of the pin (21) if its head (25) is already partially located over the undercut (15) of the associated bore hole (9).

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8. Mounting device in accordance with claim 7, characterized in that the handle (31) is attached to the pin (21) radially, lies on a guide (41) running in a radial plane for the majority of its pivoting, which is only beveled in the end area of the pivoting when the head (25) is located above the undercut (15).
9. Mounting device in accordance with one of claims 1 through 8, characterized in that the pivoting range of the movable pin (21) is approx. 180°.
10. Mounting device in accordance with one of claims 1 through 9, characterized in that the handle (31) is immobilized (37) in a position, in which the movable pin (21) is fully loaded by the spring (33).
11. Mounting device in accordance with claim 10, characterized in that the immobilization is designed as a stop device (37).
12. Mounting device in accordance with claim 11, characterized in that the stop device is designed as a notching (37) on the component (3) bearing the pins (19, 21), with which the slightly springy and/or spring-loaded (33) handle (31) engages.
13. Mounting device in accordance with one of claims 1 through 12, characterized in that the spring is a disk-spring bundle (33).
14. Mounting device in accordance with one of claims 1 through 12, characterized in that the spring (33) is designed as one piece with the associated pin (21) and is preferably designed in the shape of a slotted pin or tube.

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15. Mounting device, which forms an interface between a device (1), in particular a weapon, and an accessory device (3), with two spaced pins (19, 60) and two bore holes (7, 9) as sockets for them, each of which is equipped with an undercut (15), as well as with a spring-loaded locking device (61-64), which is attached to one (60) of the pins (19, 60) and has a handle (65), while the other pin (19) is preferably fixed, characterized in that
- the undercuts (15) of two bore holes (7, 9) are designed on the sides facing away from each other and/or on the sides facing towards each other,
 - the undercuts (15) of the bore holes (7, 9) are sloped,
 - the pins (19, 60) bear heads (23, 25) designed to be compatible with the sloped undercuts (15) and
 - one of the pins (60) can be moved towards or away from the other pin (19) against the force of the locking device (61-64) and can be moved by means of the handle (65), so that, when this pin (60) moves by means of the handle (65), its head (25) with the compatible design is released against the force of the locking device (61-64) on the sloped undercut (15) of the associated bore hole (9) and when the handle is released (65) pushes in the sloped undercut (15) due to the force of the locking device (61-64).
16. Mounting device in accordance with one of the previous claims, in which the bore holes (7, 9) are designed in a Picatinny rail (68) or another interface common for weapons.

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17. Mounting device in accordance with one of the previous claims, in which the accessory device (3) comprises a Picatinny rail (66) or another interface common for weapons.