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(54) Benevnelse **DEVICE FOR COCKING A WEAPON, WEAPON STATION AND METHOD FOR OPERATING A WEAPON**

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[0001] The invention relates to a device for cocking a weapon, in particular an automatic weapon, having an axially movable actuating element which can be coupled to a cocking element on the weapon for the purpose of cocking the weapon and wherein the control device has a control element which is movable jointly with the actuating element and a control element which is arranged at the weapon side. A further subject of the invention is a weapon station having a weapon, in particular an automatic weapon, and having a cocking device with an axially movable actuating element which is coupled to a cocking element on the weapon for the purpose of cocking the weapon and wherein the control device has a control element which is movable jointly with the actuating element and a control element which is arranged at the weapon side.

[0002] The invention also relates to a method for operating a weapon which can be cocked by means of a cocking device, in particular an automatic weapon, in which method, for the purpose of cocking the weapon, an axially movable actuating element, which is coupled to a cocking element on the weapon, of the cocking device is moved in the cocking direction of the weapon and wherein the control device has a control element which is movable jointly with the actuating element and a control element which is arranged at the weapon side.

[0003] From the field of automatic weapons in particular, various types of weapons are known which must in each case be cocked by means of a cocking element before the first shot is fired. By means of the cocking element, the recoiling part of the weapon is normally moved into a cocked position counter to the force of a spring, which is placed into a stressed state. When the weapon is actuated, the recoiling part of the weapon is then, driven by the force of the spring, accelerated in the direction of the ammunition to be fired, and is subsequently, after the shot has been fired, moved back in the direction of the cocked position owing to the resulting recoil. This process is then repeated for every further shot fired, resulting in a type of pendular motion of the recoiling part of the weapon, and a large number of shots can be fired within short periods of time.

[0004] To prevent shots being fired inadvertently, it is often also provided that the weapon can be transferred from an armed state into a safe state in which, for example, the recoiling part of the

weapon is blocked such that it is not possible for a shot to be fired. For this purpose, a manually actuable safety locking element is often provided, for example in the form of a pin that can be moved back and forth between two positions and by means of which the weapon can be transferred from an armed state into a safe state and vice versa.

[0005] In the case of manual actuation of the weapon, the actions of cocking, making safe and arming do not pose any great difficulties because the corresponding steps can be readily performed by the gunner by hand.

[0006] Particular demands arise in the case of weapons which, by way of a weapon station arranged for example on the roof of a military vehicle, can be actuated by the gunner for example from a vehicle interior which is protected against ballistic threats. This is because, in the case of such weapons, the weapon is cocked, made safe and armed not by hand but in automated fashion. Conventionally, for this purpose, both the cocking element and the safety locking element are actuated in each case by means of a separate drive, which has however proven to be cumbersome both in terms of apparatus and in terms of control technology.

[0007] EP 1 499 844 B1 has disclosed a weapon station, wherein the weapon arranged in the weapon station can be cocked, made safe and armed by means of a single motor drive, whereby the outlay in terms of apparatus and control technology can be kept relatively low. For this purpose, the weapon station has an actuating element which, in the manner of a spindle nut, can be moved axially by means of a motor drive, wherein the actuating element can be coupled to a cocking bolt on the weapon, which is situated in the movement travel of the actuating element and which can be driven along axially by said actuating element for the purpose of cocking the weapon. The actuating element simultaneously operates a spring-loaded blocking lever by means of which the weapon is made safe and armed. The blocking lever is moved back and forth between a release position and a blocking position by the movements of the actuating element, wherein the blocking lever, in its blocking position, blocks the movements of the cocking element on the weapon, whereby a movement of the recoiling part of the weapon is also blocked, and thus shots cannot be fired inadvertently.

[0008] In the case of a device of said type, it has proven to be disadvantageous that the blocking lever arranged on the weapon station does not interact with the safety locking element of the

weapon itself, but instead, the safety locking of the weapon is realized only by blocking of the cocking element, which in adverse situations, for example in the event of removal of the weapon from the weapon station, harbors the risk of undesired triggering of shots.

[0009] The invention is therefore based on the object of providing a device, a weapon station and a method for cocking a weapon, with which the weapon can be not only cocked but also made safe and armed in a simple and reliable manner.

[0010] Said object is achieved, in the case of a device and a weapon station of the type mentioned in the introduction, by a control device by means of which the actuating element can be or is coupled to a safety locking element on the weapon for the purpose of making the weapon safe and arming the weapon and wherein the control device has a control element which is movable jointly with the actuating element and a control element which is arranged at the weapon side.

[0011] Owing to the fact that the actuating element can be or is coupled by means of a control device to the safety locking element on the weapon, it is possible for the weapon to be cocked, and simultaneously also made safe and armed, in a simple manner. Owing to the coupling to the actuating element, no additional drive is required for the function of making the weapon safe and arming the weapon. Furthermore, owing to the coupling to the safety locking element on the weapon, the weapon is made safe in a particularly reliable manner, wherein there is no increased risk of undesired triggering of shots even in the event of removal of the weapon from the weapon station.

[0012] In a refinement of the invention, it is proposed that the actuating element can be moved by means of an in particular electromotive drive for the purpose of cocking the weapon and also for the purpose of making the weapon safe and arming the weapon. The use of an electromotive drive yields a construction which is advantageous both from a control technology aspect and from a cost aspect. The drive is preferably in the form of a linear drive, for example a spindle drive or toothed rack drive.

[0013] The invention provides that the control device has a control element which is movable jointly with the actuating element, and a control element which is arranged at the weapon side. Whereas one control element is coupled to the actuating element of the cocking device, the control

element at the weapon side is coupled to the safety locking element on the weapon. The two control elements serve for converting the movements of the actuating element into a defined movement of the safety locking element on the weapon. The control elements particularly preferably convert a linear movement of the actuating element into a linear movement directed orthogonally with respect to said movement, or a rotational or pivoting movement, of the safety locking element on the weapon. In this way, by moving the actuating element, the weapon can be made safe or armed, specifically by way of the safety locking element provided on the weapon.

[0014] The safety locking element on the weapon is preferably in the form of a disk-type or rotary safety lock. The safety locking element on the weapon may be arranged on the top side, the underside or on a side surface of the weapon, preferably on that side surface of the weapon which points in the direction of the cocking device.

[0015] In terms of construction, it has proven to be particularly advantageous if the control elements interact such that movements of the actuating element in and/or counter to the cocking direction of the weapon are converted into a movement of the safety locking element transversely with respect to the cocking direction of the weapon.

[0016] In a refinement in terms of construction, the control element which is movable jointly with the actuating element is formed in the manner of a control track. By means of the control track, the movement, directed axially in the cocking direction of the weapon, of the control element arranged on the actuating element can be converted in a simple manner into a transverse or pivoting movement of the control element arranged at the weapon side.

[0017] A further advantageous refinement provides that the control track has control sections which extend in a direction which is angled relative to the cocking direction of the weapon. The transmission of the movement of the control element arranged on the actuating element to the control element arranged at the weapon side takes place on the control sections. Sections which are situated between the control sections and which are directed parallel to the cocking direction of the weapon do not serve for the transmission of movements to the control element at the weapon side.

[0018] In a further refinement of the invention, the control track has a bypass for bypassing the control sections. This refinement is advantageous in particular in the case of weapons which can be cocked only when in the armed state. In the case of such weapons, for cocking the weapon, it is possible for the bypass, extending parallel to the cocking direction of the weapon, of the control track to be utilized initially, and for the weapon to subsequently be made safe by virtue of the control sections being travelled through. In the control sections, the safety locking element on the weapon is changed over or switched, whereby the recoiling part of the weapon is blocked at the weapon side. The ends of the control track preferably form, together with the bypass, a straight section over the entire length of the control track. In particular, two control sections branch off from said straight section, which control sections are preferably connected to one another by way of a section running parallel to the straight section. The bypass extends on the first straight section between the two control sections.

[0019] In a refinement of the invention, it is provided that the bypass is equipped, at the entry and/or exit side(s), with switches. By means of the switches, it is possible for either the control section or the bypass to be opened up or blocked. The switches are preferably designed so as to open up the bypass during the cocking of the weapon and to open up the control sections during the return movement or for the purpose of making the weapon safe.

[0020] A further refinement of the invention provides that the control element which is arranged at the weapon side is formed in the manner of a disengagement lever. This serves for the actuation of the safety locking means on the weapon. The control element arranged at the weapon side preferably has means, in particular a clamping element, for coupling to the safety locking element on the weapon.

[0021] It has furthermore proven to be advantageous from a construction aspect for the control elements to be coupled to one another by means of an intermediate element. The intermediate element may be guided on the control element, in particular the control track, arranged on the actuating element, and thus transmit a movement of said control element to the control element arranged at the weapon side. The intermediate element may be fixedly connected to the control element arranged at the weapon side.

[0022] In a further refinement of the invention, the control elements are coupled to one another by means of the intermediate element such that axial movements of the control element are converted, via the control sections, into transverse movements of the control element at the weapon side. The weapon is made safe and armed by means of the transverse movements of the control element at the weapon side owing to the coupling to the safety locking element on the weapon.

[0023] In a refinement of the device and weapon station, the control sections form a control travel, directed transversely with respect to the cocking direction, greater than the safety locking travel of the safety locking element. It can be ensured in this way that the safety locking means of the weapon is reliably actuated. Manufacturing and/or assembly tolerances are reliably compensated for.

[0024] From a construction aspect, it has furthermore proven to be advantageous for the intermediate element to be of resilient design for the compensation of differences between the control travel and the safety locking travel. A resilient design of the intermediate element firstly permits compensation of tolerances, and secondly, it is possible even for weapons with different safety locking travels to be made safe and armed by means of the device. The intermediate element preferably has a leaf spring.

[0025] In the case of a method of the type mentioned in the introduction, the above-stated object is achieved in that the actuating element is coupled by means of a control device to a safety locking element on the weapon, and is moved axially for the purpose of making the weapon safe and arming the weapon and wherein the control device has a control element which is movable jointly with the actuating element and a control element which is arranged at the weapon side.

[0026] Owing to the fact that the actuating element, which is movable for the purpose of cocking the weapon, is coupled by means of a control device to the safety locking element on the weapon, it is possible for the weapon to be cocked, and simultaneously also made safe and armed, in a simple manner. Owing to the coupling to the actuating element, no additional drive is required for the functions of making the weapon safe and arming the weapon. Furthermore, owing to the coupling to the safety locking element on the weapon, the weapon is made safe in a particularly reliable manner, wherein there is no increased risk of undesired triggering of shots even in the event of removal of the weapon from the weapon station.

[0027] For carrying out the method, the cocking device may have, individually or in combination, all of the features described above in conjunction with the device and the weapon station.

[0028] Further details of a device according to the invention and of a weapon station according to the invention and also of a method according to the invention will be explained below with reference to the appended drawings of exemplary embodiments, in which:

[0029] Figure 1 shows a schematic plan view of a device according to the invention in a schematic view, in which not all components are shown,

[0030] Figure 2 shows a schematic plan view of a device according to the invention in a schematic view, in which not all components are shown,

[0031] Figure 3 shows an enlarged view of a device according to a first exemplary embodiment,

[0032] Figures 4 a-e show schematic views of a device as per the illustration in figure 3, illustrating the processes during the cocking of the weapon and the processes of making the weapon safe and arming the weapon,

[0033] Figure 5 shows an enlarged view of a device according to a second exemplary embodiment, and

[0034] Figure 6 a-e show schematic views of a device as per the illustration in figure 5, illustrating the processes during the cocking of the weapon and the processes of making the weapon safe and arming the weapon.

[0035] Figures 1 and 2 show a weapon 11 which is a commercially available, also manually operable machine gun, which is received in a weapon station 10 (only partly illustrated).

[0036] By means of the weapon station 10, the weapon 11 can, by a gunner, be directed in terms of azimuth and elevation toward a target to be engaged. In this case, the gunner may be located at some distance from the weapon 11 in a space which is protected against military threats, such as for example a vehicle cabin with ballistic protection, such that the gunner is protected against hostile threats while firing shots.

[0037] However, before the weapon 11 can be actuated, it must be cocked by means of a cocking element 11.1 arranged on the weapon 11, for which purpose the cocking element 11.1 is moved counter to the firing direction of the weapon 11 into a cocking position. In this case, by means of the cocking element 11.1, a recoiling part (not illustrated) of the weapon 11 is moved into a cocked position counter to the force of a spring, which is placed into a stressed state. Then, when the weapon 11 is triggered, the recoiling part of the weapon 11 is accelerated in the direction of the ammunition by means of the stressed spring and, when it impacts against the ammunition, triggers the shot. After the shot has been fired, the recoiling part of the weapon 11 is moved into the cocked position again owing to the resulting recoil. Here, multiple triggering of the weapon 11 results in a pendular motion of the recoiling part of the weapon 11, and a multiplicity of shots can be fired within short periods of time.

[0038] Before the first shot is fired, it is also necessary for the weapon 11 to be armed. For this purpose, the weapon 11 has a safety locking element 11.2 which is arranged on the weapon 11 and which is configured in the manner of an axially movable pin which, in its safe position, blocks the recoiling part of the weapon 11, such that in the safe position of the weapon 11, no shots can be fired. Shooting is possible only when the safety locking element 11.2 has been moved into an armed position.

[0039] The weapon 11 can generally be cocked, made safe and armed without difficulty in the case of manual actuation, because the corresponding cocking and safety locking elements are arranged directly on the weapon 11 and can be operated within an extremely short time by experienced gunners. Particular demands arise when the weapon 11 is operated within the remote-operable weapon station 10, for which purpose a cocking device 1 is provided, the details of which will be discussed below.

[0040] Figure 1 shows a device 1 for cocking a weapon 11 and making the weapon safe, said device having an actuating element 2 which is movable axially in the cocking direction of the weapon 11 by means of a drive 7. The actuating element 2, and also the associated drive 7 which may for example be an electromotive linear drive, are arranged on the weapon station 10 and interact with the weapon 11 that is placed into the weapon station 10.

[0041] The actuating element 2 is coupled to the cocking element 11.1 on the weapon such that the cocking element 11.1 follows the axial movements of the actuating element 2, such that the weapon 11 can be cocked by way of movement of the actuating element 2.

[0042] As shown in particular in the illustration in figure 2, in which the cocking element 11.1 on the weapon is not shown, the actuating element 2 performs a dual function. This is because the actuating element 2 serves not only for cocking the cocking element 2 but simultaneously also for actuating the safety locking element 11.2 on the weapon. For this purpose, the actuating element 2 is coupled to the safety locking element 11.2 by means of a control device 3, such that the weapon 11 can be made safe and armed by means of corresponding movements of the actuating element 2.

[0043] Structural details of a first exemplary embodiment will firstly be described in detail below on the basis of the illustration in figure 3, before the corresponding processes during the cocking of the weapon 11, and the process of making the weapon 11 safe, by means of the device 1 are described on the basis of the illustrations in figures 4a to 4c.

[0044] Figure 3 shows a cocking device 1 which extends substantially parallel to the weapon 11 inserted into the weapon station 10. For cocking the weapon 11, a linear drive 7 is provided, by means of which an actuating element 2 can be moved back and forth in a direction parallel to the firing direction of the weapon 11. Both the cocking element 11.1 of the weapon 11 and the safety locking element 11.2 of the weapon 11 are coupled to the actuating element 2, such that both the cocking element 11.1 and the safety locking element 11.2 can be actuated by means of the common actuating element 2, and thus by means of only one drive 7.

[0045] The coupling of the actuating element 2 to the cocking element 11.1 of the weapon 11 is such that the cocking element 11.1 follows the movements of the actuating element 2. The actuating element 2 thus forms a driver for the cocking element 11.1 of the weapon 1, by means of which driver the cocking element 11.1 can be moved into its cocked position, and the weapon 11 can be cocked. In the exemplary embodiment, the cocking element 11.1 of the weapon 11 has a pin-like section 11.3 which engages into a U-shaped opening of the actuating element 2. The cocking element 11.1 can be driven in two directions by means of the two legs 2.1, 2.2 of the U-shaped opening.

[0046] The coupling of the actuating element 2 to the safety locking element 11.2 of the weapon 11 is realized by means of a control device 3. Whereas the coupling of the actuating element 2 to the cocking element 11.1 is such that the cocking element 11.1 follows the movements of the actuating element 2, the coupling of the actuating element 2 to the safety locking element 11.2 is such that the movements of the actuating element 2 are converted, by means of the control device 3, into a differently oriented movement of the safety locking element 11.2.

[0047] The weapon 11 provided in the exemplary embodiment is made safe and armed by linear movement of the safety locking element 11.2 transversely with respect to the direction of the weapon 11. The invention is however not restricted to weapons 11 with safety locking elements 11.2 of this type. For example, it may also be the case that the safety locking element 11.2 is pivoted or rotated in order to make the weapon 11 safe. In a device 1 according to the invention, these movements, too, may be generated from the linear movements of the actuating element 2 by means of a suitable control device 3.

[0048] The control device 3 has a control element 4 at the actuating element side and a control element 5 at the weapon side, which are connected to one another by means of an intermediate element 6.

[0049] The control element 4 at the actuating element side is coupled to the actuating element 2 so as to move jointly with the actuating element 2. During the cocking of the weapon 11, the control element 4 thus follows the movements of the actuating element 2.

[0050] The control element 4 is formed in the manner of a control track which has different sections. The two ends of the control track 4 are formed by linear sections 4.1, 4.2 which extend parallel to the cocking direction of the weapon 1 and thus to the movement direction of the actuating element 2. In the exemplary embodiment, the end-side linear sections 4.1, 4.2 of the control track 4 are arranged in alignment with one another. In the direction of the center of the control track 4, the two end-side sections 4.1, 4.2 are adjoined by a respective control section 4.3, 4.4. The control sections 4.3, 4.4 extend in a direction which is angled relative to the end-side sections 4.1, 4.2. The control sections 4.3, 4.4 are angled linear sections, though use may also be made of control sections 4.3, 4.4 of some other form, in particular curved control sections. The two control sections 4.3, 4.4 are arranged symmetrically with respect to a central plane of the

control track 4, and enclose between them a central linear section 4.5 which connects the control sections 4.3, 4.4 to one another, resulting in a continuous control track 4. The central linear section 4.5 is arranged parallel and offset with respect to the end-side linear sections 4.1, 4.2, resulting in a type of trapezoid.

[0051] The control element 5 at the weapon side is coupled to the safety locking element 11.2 on the weapon and serves for transmitting a movement of the actuating element 2 to the safety locking element 11.2 on the weapon. By means of a movement of the control element 5, the safety locking element 11.2 can be switched, that is to say moved back and forth between an armed position and a safe position of the weapon 11.

[0052] For coupling to the safety locking means 11.2 on the weapon, the control element 5 has an opening 5.5 in which the safety locking means 11.2 on the weapon is held. The opening 5.5 is delimited by two limbs 5.1, 5.2 which extend substantially parallel. The limbs 5.1, 5.2 clamp the safety locking element 11.2 between them, for which purpose the opening 5.5 may have a certain undersize in relation to the safety locking element 11.2. To allow certain movements of the safety locking element 11.2 on the weapon relative to the control element 5 at the weapon side, the ends of the limbs 5.1, 5.2 each have an elevation 5.3, 5.4 in the region of contact with the safety locking element 11.2 on the weapon. To make it easier for the safety locking element 11.2 to be inserted into the opening 5.5, the elevations 5.3, 5.4 are each equipped with insertion bevels. Altogether, the control element 5 at the weapon side has a pincer-like geometry and is mounted so as to be pivotable about a pivot axis A, preferably in a pivot bearing (not illustrated in the figures) of the device 1.

[0053] The two control elements 4, 5 are operatively connected to one another by means of the intermediate element 6. The intermediate element 6 is fixedly connected, by one end, to the control element 5 at the weapon side, such that a movement of the intermediate element 6 leads to a pivoting movement of the control element 5 about the axis A. By its other end, the intermediate element 6 is coupled to the control element 4 at the actuating element side. The intermediate element 6 has, for this purpose, a sliding element 6.1 which is guided in the manner of a sliding block in the control element 4, which is in the form of a control track. During the movement of the control element 4 jointly with the actuating element 2, a sliding element 6.1 moves in the control

track 4. The resulting movement leads to a movement of the intermediate element 6, and thus to a pivoting movement of the control element 5, whereby the safety locking element 11.2 of the weapon 11 can be switched.

[0054] The processes during the cocking of the weapon 11, and the processes of making the weapon 11 safe and arming the weapon 11, will be explained in detail below on the basis of the illustrations in figures 4a to 4e.

[0055] Figure 4a shows the device 1 with an uncocked, armed weapon 11. To cock the weapon 11, the actuating element 2 moves from the forward position illustrated in figure 4a into the cocked position illustrated in figure 4c counter to the firing direction of the weapon 11. In the process, the actuating element 2 drives along the cocking lever 11.1 of the weapon 11, whereby the recoiling part (not illustrated in the figures) of the weapon 11 is also transferred into its cocked position. In this position, the weapon 11 is cocked and thus prepared for the firing of a first shot.

[0056] After the weapon 11 has been cocked, the actuating element 2 can be moved back in the firing direction together with the cocking element 11.1 of the weapon 11.

[0057] During the movement of the actuating element 2, the safety locking element 11.2 of the weapon 11 is actuated simultaneously because the actuating element 2 is coupled to the safety locking element 11.2 by means of the control device 3. Since the actuating element 2 is fixedly connected to the control element 4, in the form of a control track, of the control device 3, the actuating element 2 drives the control element 4 along. During said movement, the sliding element 6.1 of the intermediate element 6 runs through the control track 4, such that the control element 5 pivots about the pivot axis A.

[0058] In the position shown in figure 4a, the weapon 11 is armed, which can be seen from the fact that the safety locking element 11.2 is situated in the lower end position in the drawings. During the movement of the actuating element 2, the weapon 1 then remains armed until the intermediate element 6, or the sliding element 6.1 thereof, enters the section 4.1 and the control section 4.3. The control section 4.3 is inclined relative to the section 4.1, such that the intermediate element 6, and with that the rotatably mounted control element 4, are moved in accordance with the gradient of the control section 4.3 until the safety locking element 11.2 has, as per the

illustration in figure 4b, reached its safe position in which firing of shots is not possible even when the weapon 11 is cocked. During the further movement of the actuating element 2, the intermediate element 6 runs through the central section 4.5, which is directed parallel to but is offset with respect to the end-side sections 4.1, 4.2. As the section 4.5 is passed through, the weapon initially remains in its safe state until the next control section 4.4 is reached. The control section 4.4 is oriented oppositely with respect to the control section 4.3, such that after the second control section 4.4 has been passed through, the safety locking element 11.2 is armed again. When the end-side linear section 4.2 has then also been passed through, as per the illustration in figure 4c, the weapon 11 is armed and cocked.

[0059] After the cocking of the weapon 11, the actuating element 2 is moved back into its initial position, cf. figures 4d and 4e. In the process, the actuating element 2 drives the control track-like control element 4 back along with it, wherein the safety locking element 11.2 on the weapon is switched again in the control sections 4.4, 4.3, and the weapon 11 is situated in the cocked and armed state in the position illustrated in figure 4e.

[0060] If it is now sought to make the weapon 11 safe, the actuating element 2 can be moved again. In this case, although the cocking element 11.1 is driven along in turn, this however has no influence on the recoiling part of the weapon 11 because the latter is already situated in its cocked position. The actuating element 2 can thus be moved merely with the aim of switching the safety locking element 11.2 on the weapon and thus making the weapon safe or arming the weapon.

[0061] For the compensation of tolerances, and in order to make it possible for a weapon station 10 to receive different weapons 11 whose safety locking elements 11.2 have different safety locking travels, the intermediate element 6 is of resilient form. In figure 4c, the safety locking travel W_2 covered by the safety locking element 11.2 during the movement from the safe position into the armed position, and the control travel W_1 made up of the offset between the sections 4.1 and 4.2 and the central section 4.5, are shown. The control travel W_1 is greater than the safety locking travel W_2. In this way, in combination with the intermediate element 6 in the form of a leaf spring, it is ensured that the safety locking element 11.2 on the weapon is always effectively actuated even taking tolerances into consideration, by virtue of the fact that, owing to the intermediate element 6, the safety locking element 11.2 on the weapon is held in position by means

of the control element 5 under spring preload. The combination of the intermediate element 6 of resilient form and the difference in length between the control travel W_1 and safety locking travel W_2 have the effect that different weapons 11 can be reliably cocked and made safe by the cocking device 1.

[0062] As the control sections 4.3, 4.4 are passed through, the sign of the bending stress in the intermediate element 6 changes, such that, in the central section 4.5, said intermediate element pushes the safety locking element 11.2 on the weapon in the direction of its safe position. In the two other linear sections 4.1, 4.2, the safety locking element 11.2 is pulled in the direction of its armed position by means of the intermediate element 6 in the form of a leaf spring.

[0063] Below, a second exemplary embodiment of the invention will be described on the basis of the illustrations in figures 5 to 6e, which second exemplary embodiment differs from the first exemplary embodiment with regard to the design of the control element 4 in the form of a control track but otherwise substantially corresponds to said first exemplary embodiment, for which reason, in order to avoid repetition, primarily the differences in said design will be discussed.

[0064] Whereas it is the case in the first exemplary embodiment as per figure 3 that the control track 4 has only one possible path through which the sliding element 6.1 runs both in one direction and in the other direction, the control track 4 in the second exemplary embodiment as per figure 5 additionally has a bypass 4.6. The bypass 4.6 connects the end sections 4.1, 4.2 of the control track 4 directly, so as to bypass the two control sections 4.3, 4.4 and the offset section 4.5. The end-side sections 4.1, 4.2 and the bypass 4.6 are in alignment with one another.

[0065] Switches 4.7, 4.8 are arranged at the entry and exit sides of the bypass 4.6, said switches being designed such that the bypass 4.6 is passed through in one movement direction, and the path via the control sections 4.3, 4.4 is followed in the other direction. In the exemplary embodiment, the switches 4.7, 4.8 are designed similarly to spring-loaded check valves, wherein one of the switches 4.7 may also be designed to be actuable, as will be explained in more detail below with reference to the illustrations in figures 6a to 6e.

[0066] It is again the case that, initially, the actuating element 2 is situated in an initial position as per the illustration in figure 6a. To cock the weapon 11, the actuating element 2 is then moved

counter to the firing direction of the weapon 11, wherein the cocking element 11.1 is driven along into its cocked position, illustrated in figure 6c. By contrast to the processes described in the first exemplary embodiment, that end of the intermediate element 6 which is formed as a sliding element 6.1 in this case does not pass through the control sections 4.3, 4.4 of the control element 4, but instead follows the direct path from one end 4.1 of the control element to the opposite end 4.2 via the bypass 4.6 arranged so as to lie in between. In the process, the rear switch 4.8 temporarily deflects upward counter to the force of a spring. During the return movement of the actuating element 2, the sliding element 6.1 then however follows a different path via the control section 4.4, the central section 4.5 and the control section 4.3 into the end section 4.1, until the end position illustrated in figure 6e is reached, in which the weapon is armed and cocked.

[0067] To make the weapon safe, it is now possible for the sliding element 6.1 to be moved along the bypass 4.6 again into the end section 4.2 and subsequently moved into the central section 4.5, wherein the safety locking element 11.2 on the weapon is transferred into the safe position.

[0068] In the case of this embodiment, owing to the bypass 4.6 and the associated switches 4.7, 4.8, it is possible for the sliding element 6.1 or the intermediate element 6 to follow different paths in each case during the movement of the actuating element 2 in the cocking direction and counter to the cocking direction, which is an advantage in particular in the case of weapons 11 which can be cocked only when in the armed state, or which can be made safe only when they have also been cocked.

[0069] The device 1 described above and the weapon station 10 described above and also the method described above are characterized in that, by means of the coupling of a safety locking element 11.2 on the weapon to the actuating element 2 for cocking the weapon 11, a weapon 11 with the actuating element 2 can be cocked and made safe, and owing to the coupling to the safety locking element 11.2 on the weapon, there is no risk of undesired shots being fired even in the event of removal of the weapon 11.

Reference signs:

1	Device
2	Actuating element
2.1	Limb
2.2	Limb
3	Control device
4	Control element
4.1	Linear section
4.2	Linear section
4.3	Control section
4.4	Control section
4.5	Offset section
4.6	Bypass
4.7	Switch
4.8	Switch
5	Control element
5.1	Limb
5.2	Limb
5.3	Elevation
5.4	Elevation
5.5	Opening
6	Intermediate element
6.1	Sliding element
7	Drive
10	Weapon station
11	Weapon
11.1	Cocking element
11.2	Safety locking element
11.3	Pin

A	Pivot axis
S	Cocking direction
W_1	Control travel
W_2	Safety locking travel

P a t e n t k r a v

1. Anordning for å spenne et våpen (11), spesielt et automatvåpen, med et aksialt bevegelig aktiveringselement (2) som kan kobles til et haneelement (11.1) på våpensiden for å spenne våpenet (11),
karakterisert ved

en styringsanordning (3), via hvilken aktiveringselementet (2) kan kobles til et sikringselement (11.2) på våpensiden for sikring og avsikring av våpenet (11), hvor styringsanordningen (3) har et styreelement (4) som er bevegelig sammen med aktiveringselementet (2), og et styreelement (5) anordnet på våpensiden.

2. Våpenstasjon med et våpen (11), spesielt et automatvåpen, og en haneanordning (1) med et aksialt bevegelig aktiveringselement (2) som er koblet til et haneelement (11.1) på våpensiden for å spenne våpenet (11),
karakterisert ved

en styringsanordning (3), via hvilken aktiveringselementet (2) er koblet til et sikringselement (11.2) på våpensiden for sikring og avsikring av våpenet (11), hvor styringsanordningen (3) har et styreelement (4) som er bevegelig sammen med aktiveringselementet (2), og et styreelement (5) anordnet på våpensiden.

3. Anordning ifølge krav 1 eller våpenstasjon ifølge krav 2, karakterisert ved at aktiveringselementet (2) kan beveges ved hjelp av en spesielt elektromotorisk drivkraft (7) for å spenne våpenet (11) og også for å sikre og avsikre våpenet (11).

4. Anordning ifølge krav 1 eller våpenstasjon ifølge krav 2, karakterisert ved at styreelementene (4, 5) samvirker på en slik måte at bevegelser av aktiveringselementet (2) i og/eller mot spenneretningen (S) til våpenet (11) blir overført til en bevegelse av sikringselementet (11.2) på tvers av spenneretningen (S) til våpenet (11).

5. Anordning ifølge krav 1 eller krav 4 eller våpenstasjon ifølge krav 2 eller krav 4, karakterisert ved at styreelementet (4) som er bevegelig sammen med aktiveringselementet (2), er dannet på samme måte som en styrekurve.

6. Anordning ifølge krav 5 eller våpenstasjon ifølge krav 5, karakterisert ved at styrekurven (4) har styrepartier (4.3, 4.4) som strekker seg i en retning som er vinklet i forhold til spenneretningen (S) til våpenet (11).

7. Anordning ifølge krav 6 eller våpenstasjon ifølge krav 6, karakterisert ved at styrekurven (4) har en omledning (4.6) for å omgå styrepartiene (4.1).

8. Anordning ifølge krav 7 eller våpenstasjon ifølge krav 7, karakterisert ved at omledningen (4.6) er utstyrt med veksler (4.4) på inngangs- og/eller utgangssiden (4).

9. Anordning ifølge ett av kravene 1 til 8 eller våpenstasjon ifølge ett av kravene 2 til 8, karakterisert ved at styreelementet (5) anordnet på våpensiden er dannet på samme måte som en utløserspak.

10. Anordning ifølge ett av kravene 1 til 9 eller våpenstasjon ifølge ett av kravene 2 til 9, karakterisert ved at styreelementene (4, 5) er koblet til hverandre via et mellomelement (6).

11. Anordning ifølge krav 10 eller våpenstasjon ifølge krav 10, karakterisert ved at styreelementene (4, 5) er slik koblet til hverandre via mellomelementet (6) at aksialbevegelser av styreelementet (4) blir overført, via styrepartiene (4.1), til tverrbevegelser av styreelementet (5) på våpensiden.

12. Anordning ifølge ett av kravene 6 til 11 eller våpenstasjon ifølge ett av kravene 6 til 11, karakterisert ved at styrepartiene (4.3, 4.4) danner en styrevandring (W_1) rettet på tvers av spenneretningen som er større enn sikringsvandringen (W_2) til sikringselementet (11.2).

13. Anordning ifølge krav 12 eller våpenstasjon ifølge krav 12, karakterisert ved at mellomelementet (6) har en fjærende utførelse for å utlikne differanser mellom styrevandringen (W_1) og sikringsvandringen (W_2).

14. Fremgangsmåte for betjening av et våpen (11), spesielt på et automatvåpen, som kan spennes via en haneanordning (1), hvor, for å spenne våpenet (11), et aksialt bevegelig aktiveringselement (2) for haneanordningen (1), som er koblet til et haneelement (11.1) på våpensiden, beveges i spenneretningen til våpenet (11), karakterisert ved

at aktiveringselementet (2) via en styringsanordning (3) er koblet til et sikringselement (11.2) på våpensiden og beveges aksialt for å sikre og avsikre

våpenet (11), hvor styringsanordningen (3) har et styreelement (4) som er bevegelig sammen med aktiveringselementet (2), og et styreelement (5) anordnet på våpensiden.

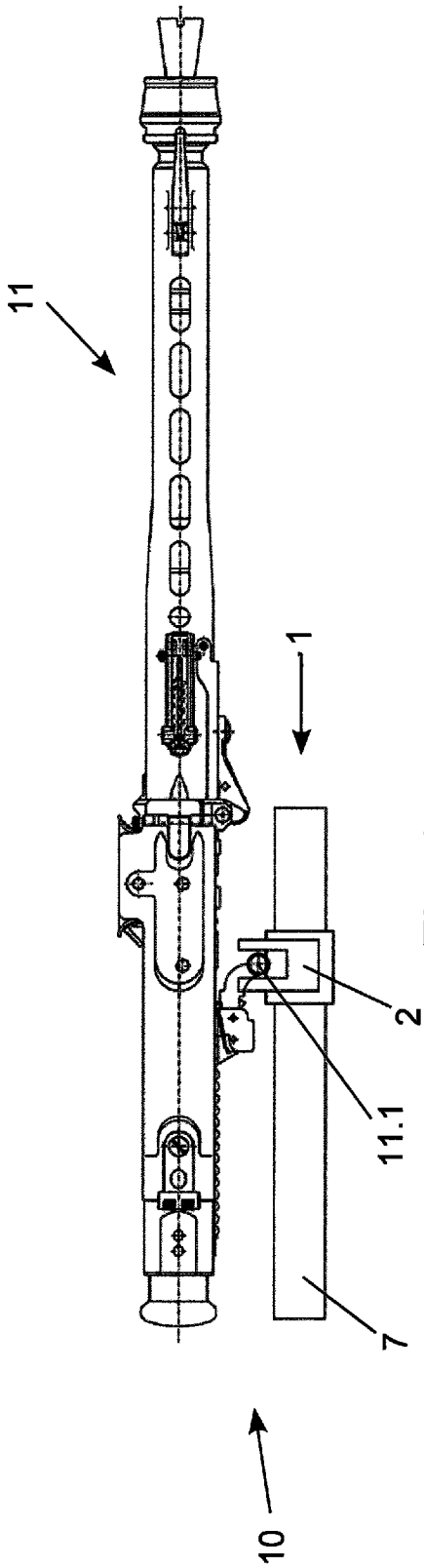

Fig. 1

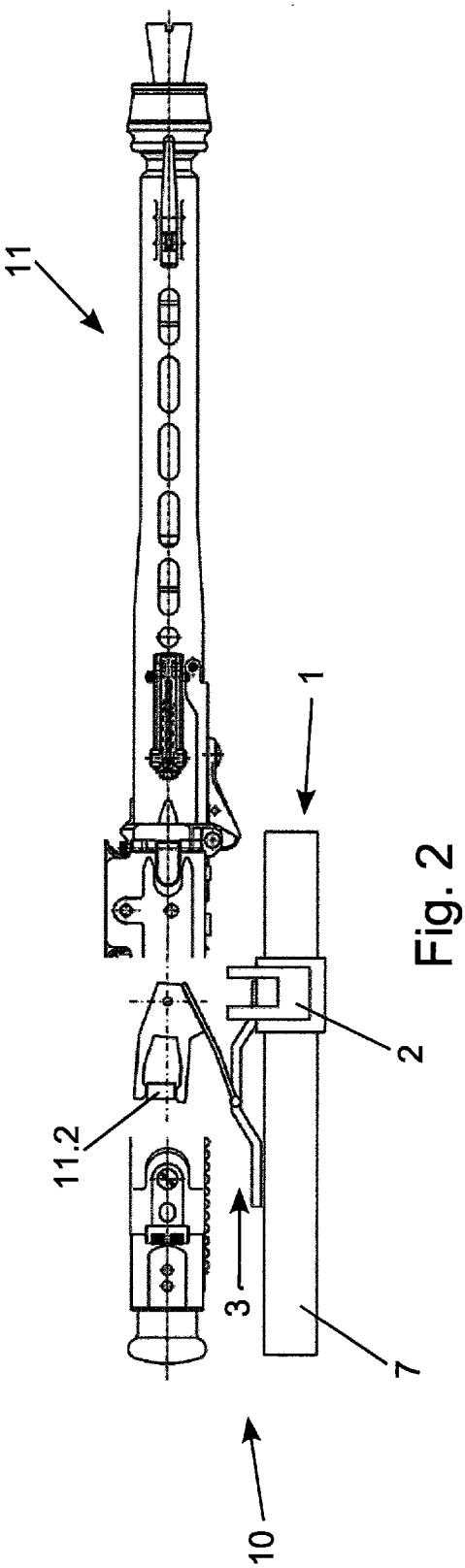

Fig. 2

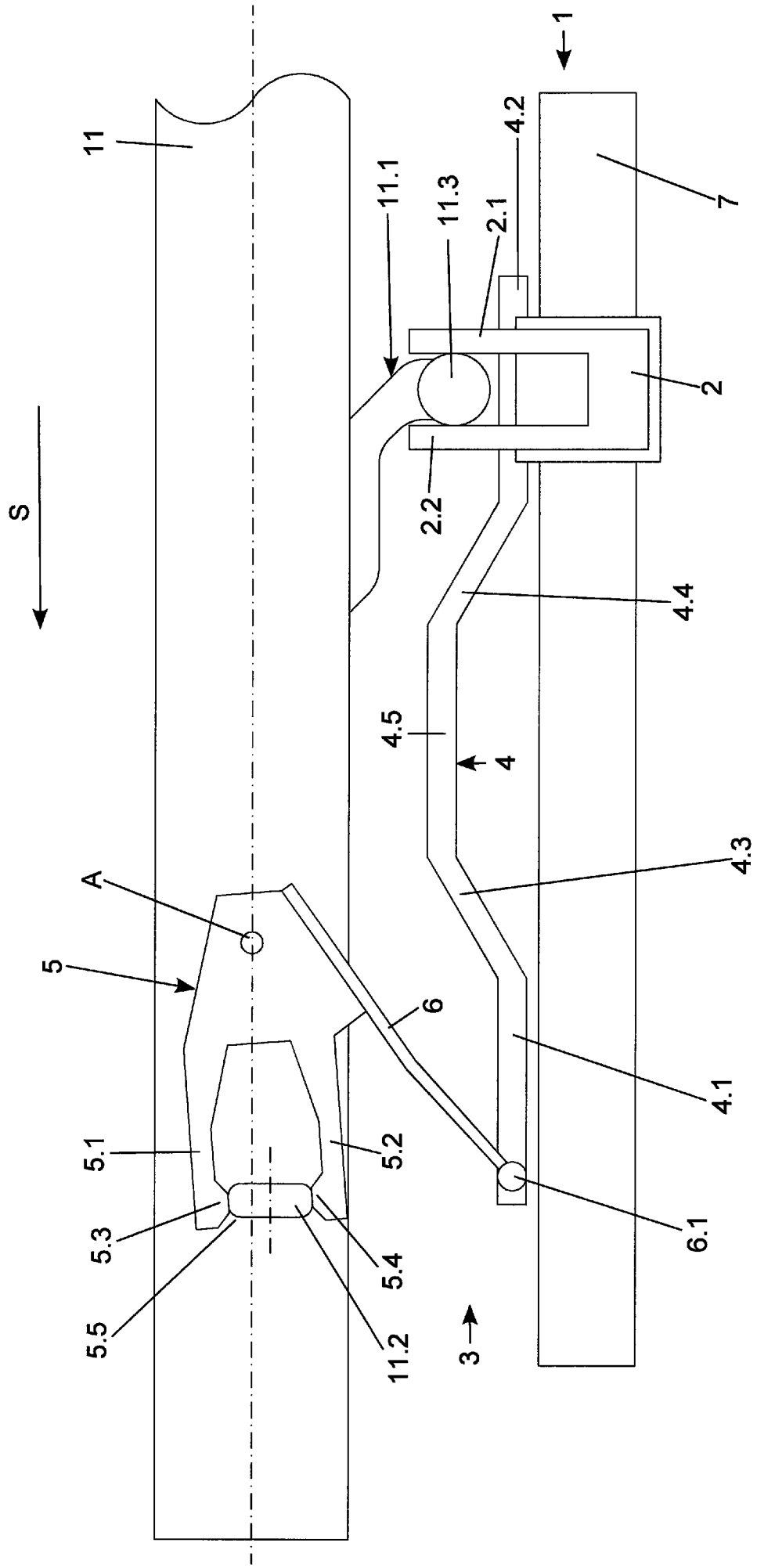

Fig. 3

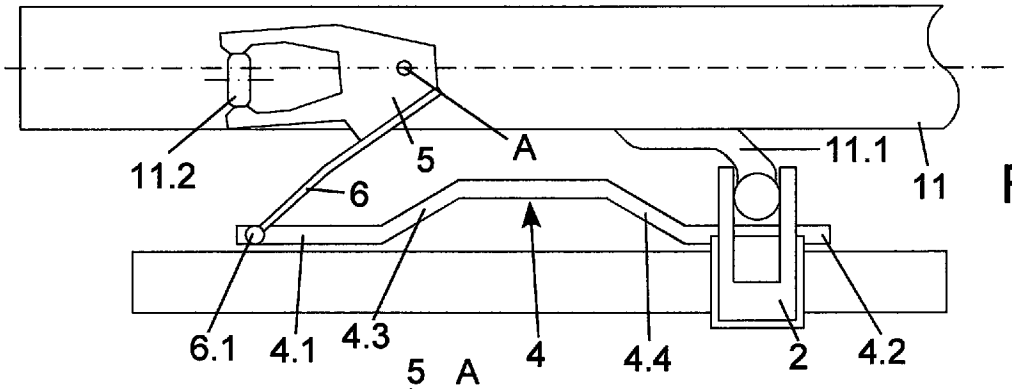

Fig. 4a

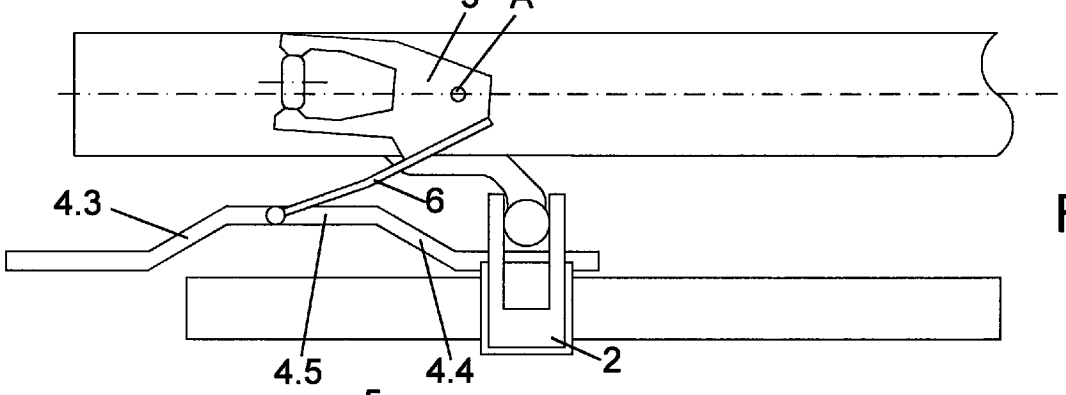

Fig. 4b

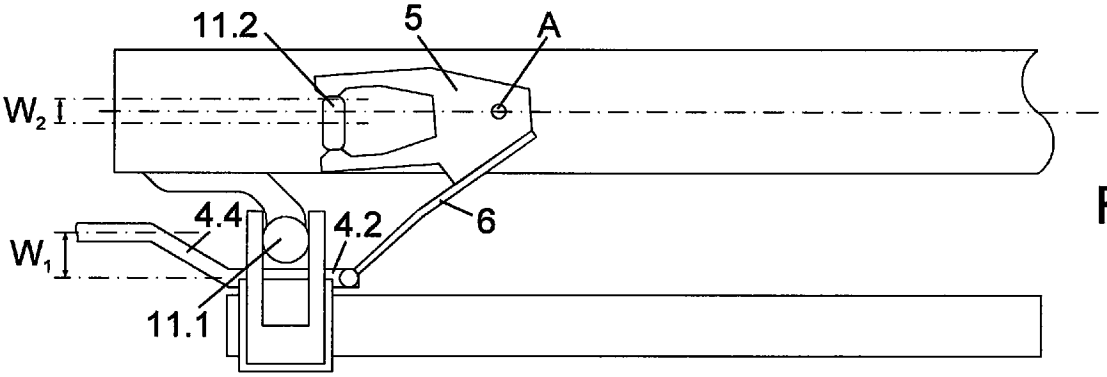

Fig. 4c

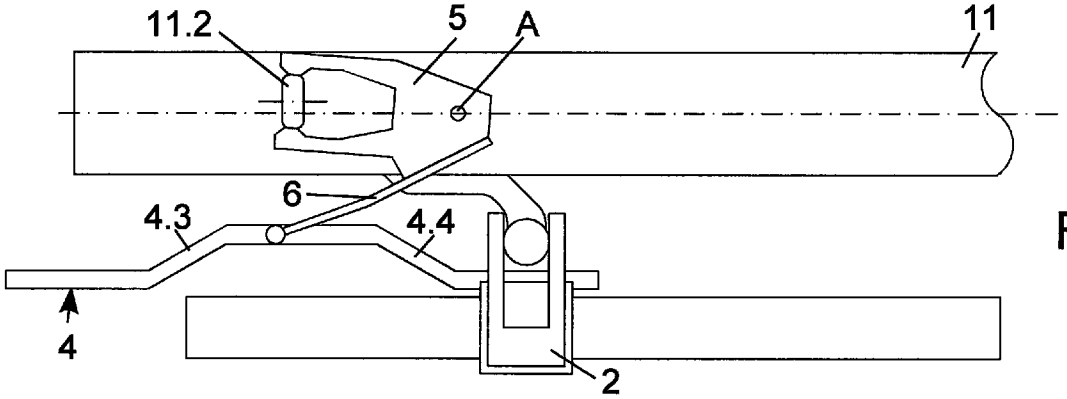

Fig. 4d

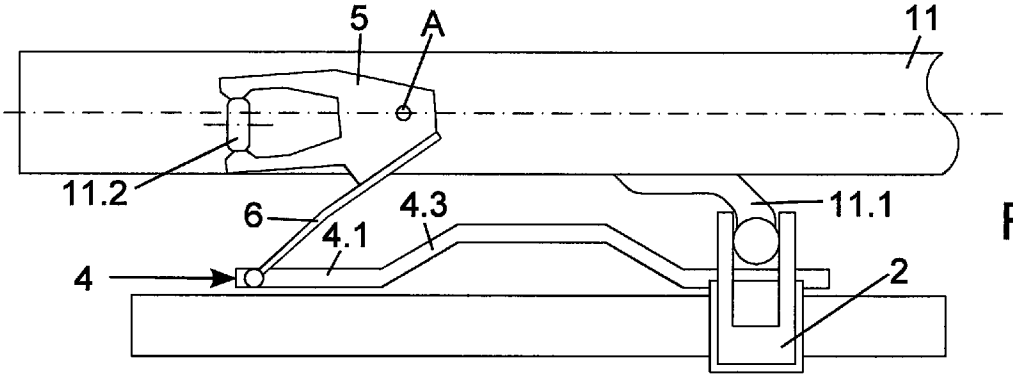

Fig. 4e

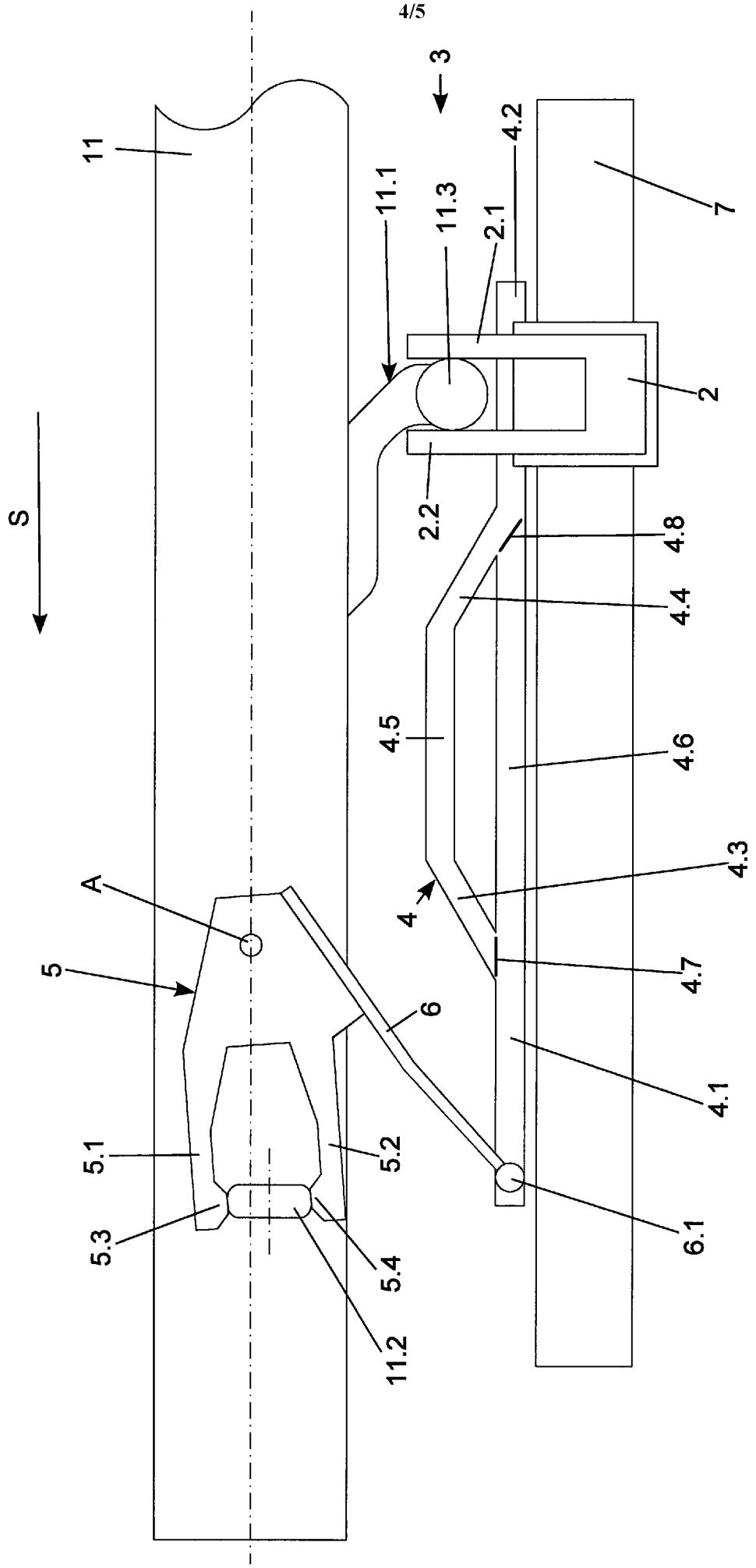

Fig. 5

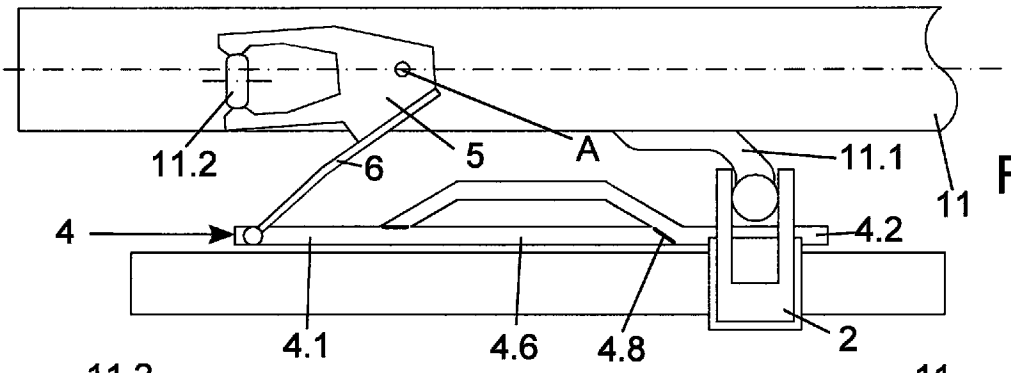

Fig. 6a

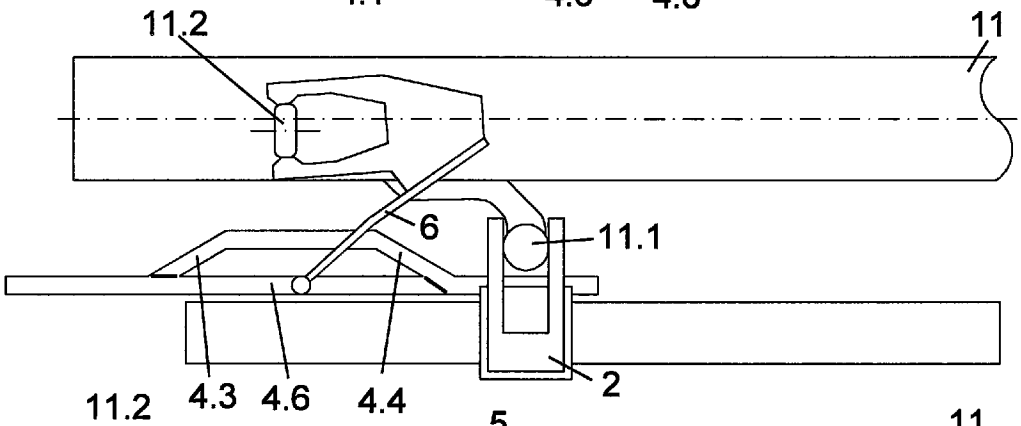

Fig. 6b

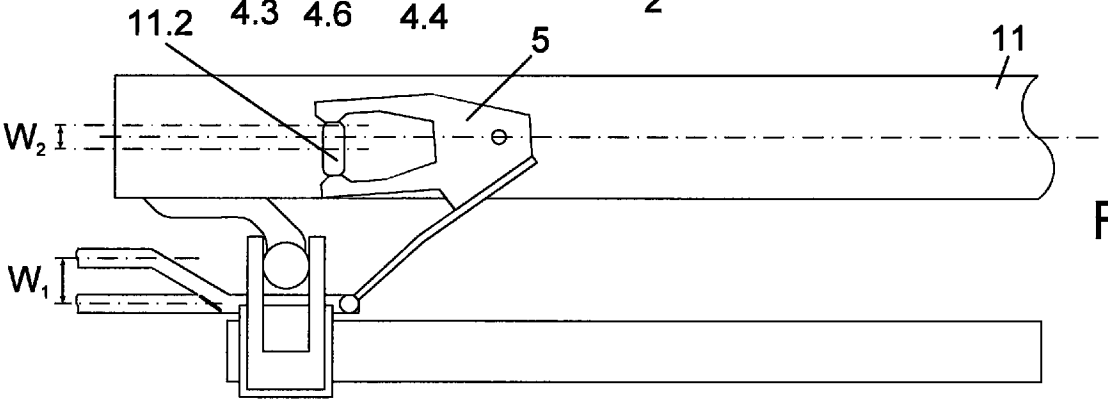

Fig. 6c

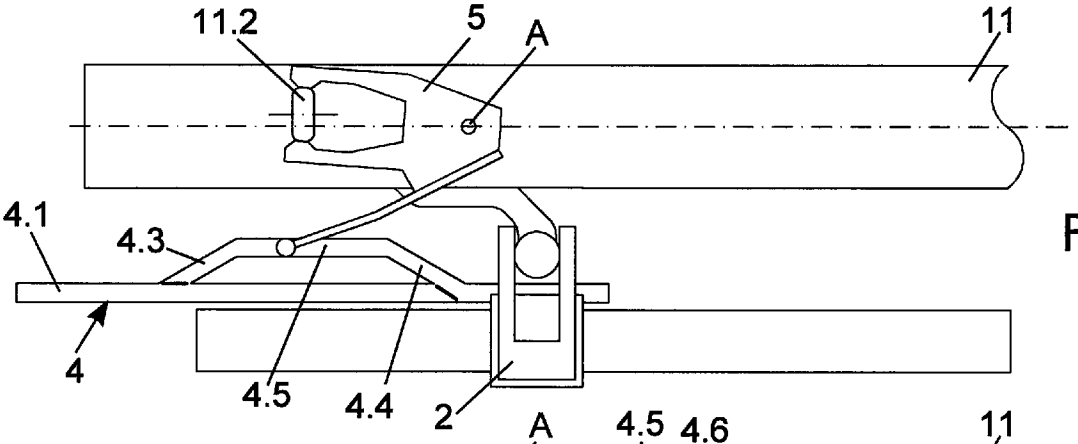

Fig. 6d

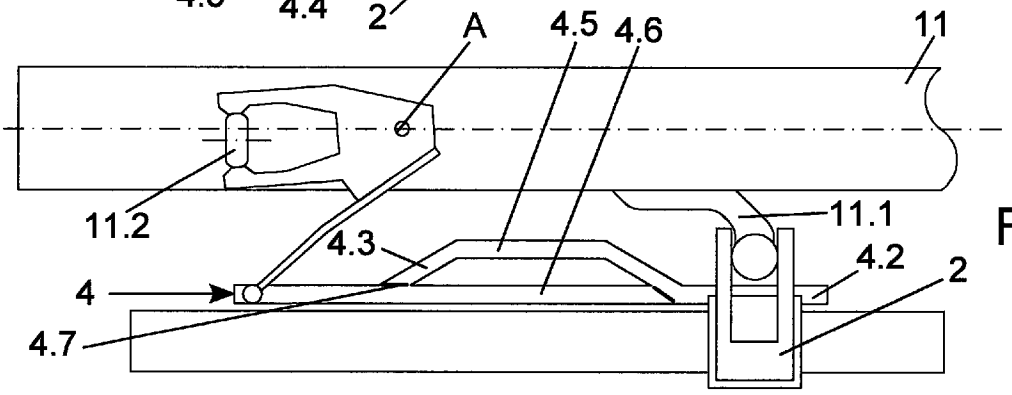

Fig. 6e