

[54] SAFETY DEVICE FOR SMALL ARMS

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Primary Examiner—Benjamin A. Borchelt

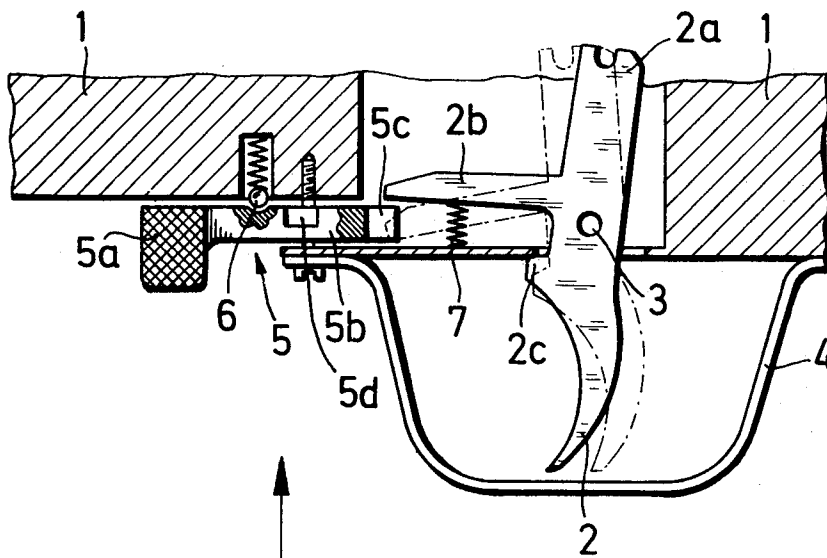
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[57] ABSTRACT

A safety device for small arms, which comprises a safety lever and a trigger device connected with the safety device. The safety lever is pivotally mounted on the underside of the small arms directly in front of the trigger device crosswise to the operation plane of the latter. The safety lever includes a part differently limiting the movement range of the trigger device depending upon the position of the safety lever, whereby the function positions of the safety lever are disposed symmetrically on both sides thereto, starting from the vertical median plane of the small arms.

5 Claims, 5 Drawing Figures



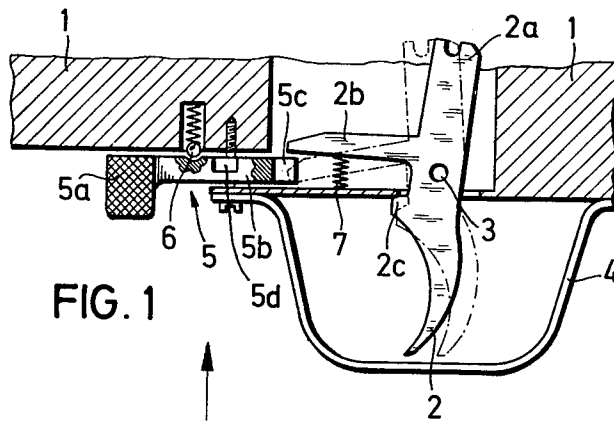
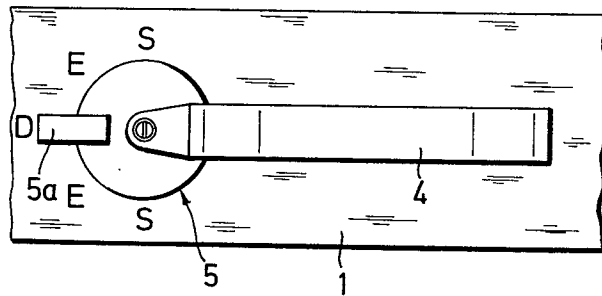
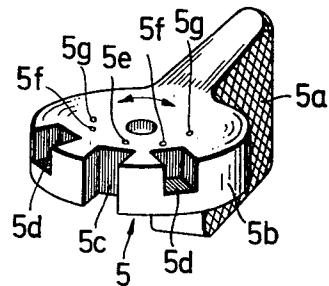


FIG. 2



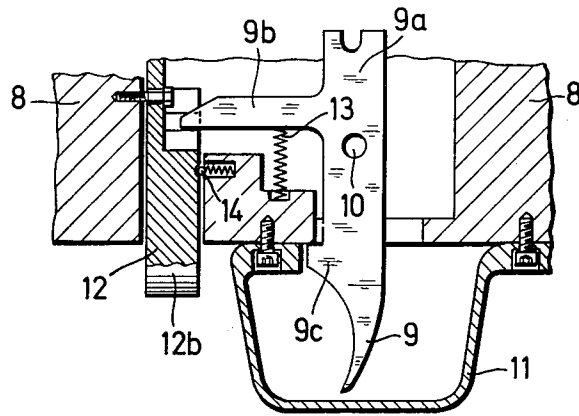


FIG. 4

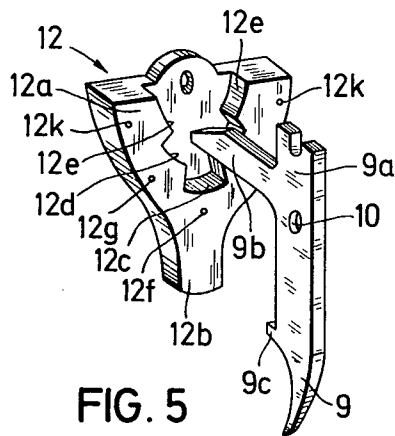


FIG. 5

## SAFETY DEVICE FOR SMALL ARMS

The present invention relates to a safety device for small arms with a safety lever connected with trigger device.

Safety devices for automatic small arms are known, the safety lever of which is displaceable and rotatable, respectively, in different resting positions, however, disadvantageously only on one side of the arms. By this arrangement such lever is suitable for operation either by the fingers of the right hand and/or of the left hand. In the rifle known as G3, for example, the safety lever is disposed on the left side of the arms. The operation of the safety lever takes place in case of right-handed rifle men by means of the fingers of the left as well as of the right hand. In case of left-handed rifle men, the handling is found very complicated, since the rifle man must grip over in view of the left trigger with the right hand over the arms. In order to indicate to left-handed rifle men at least in a simple manner in which function position the safety lever is disposed, a bolt is secured to this lever, which is passed through the housing and at its end provided on the right side of the housing is a marker which indicates the prevailing function position of the lever.

Furthermore, safety devices are also known, which are formed as devices displaceable through the arms housing perpendicularly to the arms axis. By this arrangement the individual resting positions are obtained by the displacement by example of a bolt. These safety devices offer, however, no absolute safety, since this bolt is displaceably already in case of a comparatively easy hit on one of its outer sides from its set function position. Furthermore, this device must be operated alternately on the left and the right arms side.

It is one object of the present invention to provide a safety device for automatic arms, which selectively can be operated by a right-handed person or a left-handed person equally easily and each of which indicates immediately the present function position of a rifle equipped with this device. Furthermore this device is to be provided in a protective position and must be favorably produced as to its costs.

It is another object of the present invention, to provide a safety device for small arms, wherein the safety lever is pivotably mounted on the bottom of the arms directly in front of the trigger crosswise to its operation plane and has a part differently limiting the movement range of the trigger depending upon the position of the safety lever, whereby the function positions of the safety lever, starting from the vertical center plane of the arms, are symmetrically arranged on both sides thereof. By this arrangement in front of the trigger guard, the safety lever is provided in a protected position easily reachable by the rifle man. From the symmetrical arrangement on both sides of the function position results for left as well as for right-handed rifle men an equally simple manipulation of the safety lever. In small arms for military purposes each rifle man trained with this firearm can ascertain even at night and without any difficulty and in case of an exchanged rifle by sensing of the safety lever, in which function position the latter is disposed.

In accordance with another feature of the present invention the part limiting the movement range of the trigger comprises a disk rotatably mounted on the arms

on the bottom side of the arms housing perpendicular to the longitudinal direction of the firearm, on the end face of which pointing towards the firearm housing close to the outer diameter, a recess is formed coordinated to each function position, of which a median recess, by example, corresponding with the function position for "firing" is disposed symmetrically opposite the safety lever, while the recesses, for example, for function positions "safe" and under circumstances other function positions in relation to the median recess are symmetrically disposed from both sides, thereto, whereby the recesses corresponding to the different function positions have different depths and cooperate with a lever connected with the trigger.

Furthermore in accordance with the present invention in the above stated embodiment another function position of the safety lever is determined by the height of the disk.

In a further embodiment, the part limiting the movement range of the trigger comprises, in accordance with the present invention, a disk shaped segment rotatably mounted parallel to the longitudinal axis of the firearm in the firearm housing, which segment is, corresponding to the prevailing function position, equipped with abutments, the median of which, for example, the abutment corresponding by example with the function position "firing" is disposed in the direction of the safety lever while the abutments, by example, for the function positions "safe" under the circumstances further functions in relation to the median abutment are from both sides symmetrically provided, whereby the abutments corresponding with the different function positions have different distances from the rotary point of the disk shaped segment and cooperate with the lever rigidly connected to the trigger.

In the shown safety devices an easy handling and space saving structure is brought about, which is desirable particularly in small arms for military purposes. The pivoting range of the trigger lever is limited directly, so that functional disturbances can be excluded to a great extent. By the use of this relatively simple safety device, a favorable solution is created thereby as to costs.

In accordance with a further feature of the present invention the part limiting the movement range of the trigger a resting recess, coordinated to each function position, which recesses cooperate with the resting device disclosed in the firearm housing. Thus it is simplified for the rifle man by the resting of the resting position in the resting recess the setting of the prevailing function position, since a further movement over a resting position is connected with an additional force.

With these and other objects in view which will become apparent in the following detailed description the present invention which is shown by example only, will be clearly understood in connection with the accompanying drawings, in which:

FIG. 1 is a safety lever pivotably provided on the bottom side of the firearm in direct connection with the trigger mechanism, which is not shown;

FIG. 2 is a perspective showing of a safety lever in accordance with FIG. 1;

FIG. 3 is an elevation of FIG. 1 in the arrow direction;

FIG. 4 is a safety lever perpendicular to the trigger and pivotable in the arms housing in direct connection with the trigger mechanism, which is not shown; and

FIG. 5 is a perspective view of the safety lever shown in FIG. 4.

Referring now to the drawings, FIG. 1 discloses a section of an arms housing 1, in which a trigger 2 is pivotable about an axis 3 and whereby the trigger 2 is arranged within a trigger guard 4 secured to the arms housing 1. The trigger 2 is equipped with a stay 2a, which effects a trigger device (not shown). A safety lever 5 is pivotably disposed on the bottom side of the arms in front of the trigger guard 4 as a disk 5b equipped with a handle 5a. On the periphery of the disk 5b are provided recesses 5c and 5d, and one of the recesses 5c is disposed diametrically opposite the handle 5a, while two additional recesses 5d are arranged on both sides of the recess 5c and symmetrically thereto at about 45° and pointing towards the inside of the arm. (For clarification the visible of the recesses 5d is turned in FIG. 1 in the plane of the drawing). Likewise on the end face of the disk 5b (FIG. 2) pointing to the arms housing 1 are provided resting recesses 5e, f, g, (FIG. 2) corresponding with the recesses 5c and 5d, and additionally thereto are arranged at about 90° to the handle 5, and a resting device 6 (FIG. 1) is provided which is springbiased cooperating with the resting recesses in the disc 5b. The resting recesses 5e, f, g are coordinated to the respective function positions in the order of "permanent firing," "individual firing," "safe." A lever 2b is provided on the trigger 2 at a right angle in the direction towards the safety lever 5, which lever 2b presses the trigger over a spring 7, supporting itself in the arms housing 1, the trigger 2 with its nose 2c up to the arms housing 1. The end of the lever 2b is arranged above the recess 5c of the safety lever 5.

Referring now again to the drawings and in particular to FIG. 3, a bottom plan view of the arrangement disclosed in FIG. 1 is shown, in the arrow direction, whereby the arrangement, in accordance with the present invention, of the safety lever is visible in front of the trigger guard 4, as well as the arrangement of the function positions D= "permanent firing," E= "individual firing" and S= "safe."

The operation of this safety device is as follows:

FIG. 1 shows a function position "permanent firing," in which the lever 2b of the trigger 2 is in resting position above the recess 5c of the safety lever 5. The lever 2b of the trigger 2 is connected over the stay 2a with a trigger device (not shown). During withdrawal of the trigger 2 against the force of the spring 7 into the dotted position, the trigger 2 is moved so far from its resting position, as the recess 5c permits in the pivotable safety lever 5. The resting device 6 of the arms housing 1 is disposed in the rest marking 5e of the safety lever 5.

During the pivoting of the safety lever 5 against the spring force of the resting device into the function position "individual firing," one of the recesses 5d comes to lie below the lever 2b. The resting device 6 operates now with the corresponding resting recess 5f. During a withdrawal of the trigger 2, the latter can only pivot corresponding to the depth of the recess 5d, so that the path performed by the end of the lever 2b is shorter than in case of the function position "permanent fir-

ing." During a further pivoting of the safety lever 5 into the function position "safe," the entire height of the disk-shaped safety lever 5 lies below the lever 2b of the trigger 2, so that the latter is blocked, while in this function position a resting device 6 engages into the corresponding resting recess 5g.

The next example shows, how in an arms housing 8 (FIG. 4) a trigger 9 is pivotably mounted about an axle 10 and is disposed within a trigger guard 11 arranged on the arms housing 8. The trigger 9 is equipped with a stay 9a, which is in connection with a trigger mechanism (not shown). A safety lever 12 is disposed in front of the trigger guard 11, which safety lever 12 comprises a disk-shaped segment 12a and is equipped with a handle 12b, and is pivotably mounted parallel to the longitudinal axis of the arms in the arms housing 8. The disk-shaped segment 12a is equipped on its side pointing towards the trigger 9 with abutments 12c, d and e, having different distances from the rotary point of the safety lever 12 (FIG. 5). A lever 9b is provided on the trigger 9 at a right angle and in the direction towards the safety lever 12, which lever 9 presses over a spring 13, supporting itself in the arms housing 8, the trigger 9 with its nose 9c up to the arms housing 8. The end of the lever 9b is arranged over an abutment 12c of the safety lever 12. Likewise, resting recesses 12f, g, and k are likewise arranged on the side pointing towards the trigger 9 of the disk-shaped segment 12a corresponding with the abutments 12c, d and e, and the function position "permanent firing," "individual firing" and "safe," respectively, of which the resting recess 12f is in engagement with a resting device 14 disposed in the arms housing 8.

The operation of this safety device is described as follows:

FIG. 4 shows a safety device in the function position "permanent firing." The lever 9b of the trigger 9 is disposed above the abutment 12c and permits upon operation of the trigger 9 a pivoting upwardly. The resting device 14 rests in the resting recesses 12f of the safety lever 12. After the pivoting of the safety lever 12 in the function position "individual firing," the abutment 12d of the safety lever 12 is arranged below the lever 9b and limits the pivoting range of the latter. The resting device 14 cooperates together with the resting recess 12g. After a further pivoting of the safety lever 12 with the function position "safe," the abutment 12e is so close below lever 9b, that the trigger 9 can no more be operated. This function position is fixed by the resting device 14 entering the resting recess 12k.

While I have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense.

I claim:

1. A safety device for small arms, comprising a safety lever, a trigger device connected with said safety device, said safety lever being pivotably mounted on the underside of said small arms directly in front of said trigger device crosswise to the operation plane of the latter, and said safety lever including a part differently limiting the movement range of said trigger device depending upon the position of said safety lever, whereby

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the function positions of said safety lever being disposed symmetrically on both sides thereto, starting from the vertical median plane of said small arms.

2. The safety device, as set forth in claim 1, wherein 5  
 said part comprises a disc connected with said safety lever and rotatably mounted on the bottom side of an arms housing perpendicularly to the longitudinal direction of said arms,  
 said disc having an end face pointing to said arms 10  
 housing,  
 said end face including a recess adjacent the outer diameter coordinated to each of the function positions,  
 said recesses including a median recess correspond- 15  
 ing with the function position "firing" and being disposed diametrically opposite of a handle of said safety lever,  
 said recesses including that for the function position 20  
 "safe" is disposed on both sides of and symmetrically to said median recess, and  
 said recesses corresponding with said different function positions have different depth and cooperate with a lever rigidly connected with said trigger device. 25

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3. The safety device, as set forth in claim 2, wherein said disc has a height determining another function position of said safety lever.

4. The safety device, as set forth in claim 1, wherein 5  
 said part comprises a disc-shaped segment rotatably mounted in an arms housing parallel to the longitudinal axis of said arms,  
 said part includes abutments corresponding with a related function position,  
 a median of said abutments corresponding with the 10  
 function position "firing" is disposed in the direction of a handle of said safety lever,  
 said abutments including that for the function position "safe" is disposed on both sides of and sym-  
 metrically to said median of said abutments,  
 said abutments corresponding with the different 15  
 function positions have different distances from the rotary point of said segment, and cooperate with a lever connected with said trigger device.

5. The safety device, as set forth in claim 1, wherein 20  
 said part has a resting recess coordinated to each of said function positions, and  
 a resting device disposed in an arms housing and cooperating with said resting recesses.

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