AUTOMATIC FIREARMS WITH MECHANICAL SERVO-RELEASE MECHANISM

Inventors: Bernard Pierre, Lyon; René Volle, Bourges; Georges Simon, Saint-Germain-du-Puy, all of France

Assignee: Etat Français, Paris, France

Filed: Oct. 29, 1973

Appl. No.: 410,404

Foreign Application Priority Data
Oct. 27, 1972 France 72.38122

U.S. Cl. ........................................ 89/141; 89/142
Int. Cl^2........................................... F41D 11/02

Field of Search ............. 89/132, 141, 142, 145

References Cited
UNITED STATES PATENTS
1,573,655 2/1926 Sutter 89/142

Primary Examiner—Stephen C. Bentley
Attorney, Agent, or Firm—Larson, Taylor & Hinds

ABSTRACT
The servo-release comprises a trigger retractable by a spring and which can be lifted under the action of a cam borne by a slider displaceable by a control device by percussion with a latch and counter-latch neutralizable by a catch servo-coupled to the firing axle. The invention is applicable particularly to firearms of small or medium calibre.

5 Claims, 5 Drawing Figures
AUTOMATIC FIREARMS WITH MECHANICAL SERVO-RELEASE MECHANISM

The invention relates to automatic firearms (especially those of small and medium caliber, that is to say of caliber comprised between 12 and 50 mm) equipped with a mechanical servo-release, this latter expression denoting release mechanisms coming into play, for the initiation and/or arrest of firing, by means of energy derived from a movable part of the firearm, this energy being, if necessary, storable in an energy storage constituted, for example, by a spring or other elastic device.

And it relates more particularly, because it is in this case that its application seems to offer the most advantage, but not exclusively, among these automatic firearms, to those provided with a firing selector, that is to say a mechanism enabling the firer to determine, by a preliminary manoeuvre, the type of firing (firing in bursts or firing shot by shot) released by the action of the release mechanism.

It seems opportune, before entering into the various release mechanisms of the invention, to recall succinctly the desirable criteria for the mechanical servo-release of such automatic weapons.

A first criterion relates to forces which the gun operator must provide to actuate the servo-release, which forces it is desirable to reduce as much as possible.

A second criterion relates to the number and the weight of the parts of the release mechanism which undergo alternating movements on firing of bursts, the number and weights of which parts it is of course advantageous to reduce to increase the life of said mechanism.

A third criterion relates to the precision of the moment of lifting the sear.

A fourth criterion relates to the simplicity and accessibility of the constituent elements of the release mechanism, this fourth criterion conferring on the servo-release, when it is satisfied, an increased safety of operation.

It is a particular object of the invention to provide an automatic firearm equipped with a mechanical servo-release satisfying simultaneously and better than mechanical servo-releases known hitherto, the four criteria which have just been considered. The automatic firearm with a mechanical servo-release, according to the invention, is of an open breech type, that is to say comprising a breech mechanism, with an alternating longitudinal motion, which is retained before firing, in open rearward position, against the action of at least one recovery spring, by a sear whose withdrawal, caused by the mechanical servo-release of the firearm, frees the abovesaid breech mechanism which then effects its closing travel under the effect of the abovesaid recovery spring, the abovesaid automatic firearm being characterised in that its mechanical servo-release comprises, among other elements,

- a pivoting sear mounted in a removable casing borne by the firearm and constantly subject to the action of a first elastic return device sufficiently powerful to cause the retraction of said sear when the latter occupies its active position for which it retains in open rearward position the breech mechanism of the firearm,
- a control cam for the sear borne by a slider mounted in the abovesaid casing capable of being moved longitudinally forwards, against the action of a second elastic return device, by leaving an extreme rearward position for which the control cam is spaced from the sear which then occurs withdrawn by the first elastic return device, thereby passing through a succession of intermediate position of which the control cam cooperates with the sear thereby displacing it progressively and imperatively up to its active position, and thereby finally reaching a locked forward position for which the abovesaid control cam temporarily locks the abovesaid sear in active position,
- a device for control by percussion, neutralizable, operating by borrowing energy from a retracting part of the breech mechanism of the firearm capable, when it is not neutralized, of causing the abovesaid slider to pass from its extreme rear position to its extreme forward position against the action of the abovesaid second elastic return device,

first neutralizing means capable of rendering this percussion control device out of operation, the said first neutralizing means being servo-coupled in such a way, to a release for the initiation of firing actuated by the crew of the weapon, that, when the crew acts on this release, the abovesaid first neutralizing means intervene to prevent the arrest of firing and to permit firing in a burst which is continued until the crew frees the abovesaid release,

and second neutralizing means capable of rendering inoperative the locking device temporarily retaining the abovesaid slider in the vicinity of its extreme forward position, these second neutralizing means being also servo-coupled to the abovesaid firing initiation release so that, when the crew acts on this release, the abovesaid second neutralizing means come into play to lock the slider bearing the control cam of the sear, which slider is then restored to its extreme rear position (to which the sear is withdrawn) by the action of the second above-mentioned elastic return device.

It will be understood that such a mechanical servo-release satisfies simultaneously and fully the four criteria evoked above, given that,

- on one hand, the considerable force to be brought into play for disengaging the sear is supplied by the powerful spring of the sear whose placing under tension is ensured by energy derived from a retracting member of the breech mechanism of the firearm,
- on the other hand, the lifting of the sear is monitored with precision by the breech mechanism,
- on the other hand again, on firing in a burst, the only parts in motion of the servo-release are certain elements of its percussion control device, which elements however do not undergo practically any stress since, at this stage, the abovesaid device has been placed in resting position by the first neutralizing means,
- and, on the other hand lastly, the assembly of the servo-release is constituted by simple elements (cam, bolts, slider, etc. . . .) housed in a removable casing and graduated in the longitudinal direction of the level of the floor of the casing, that is to say in a zone relatively easy of access.

When the firearm is provided with a firing selector, it is then arranged, preferably, that this firing selector operates directly with the first neutralizing means associated with the percussion control device and this in such a way that,

- in its position of firing in bursts, the selector renders these first neutralizing means active, thus enabling continuous firing,
3,918,347

and in its position for firing shot by shot, said selector renders said neutralizing means inactive, the first shot fired then causing the arrest of firing through the percussion control device.

Now as regards the percussion control device and the first neutralizing means associated with this control device, they may advantageously be constituted,

as regards the percussion control device proper, by, on the one hand, a latch mounted pivotally on a transverse axle (borne by the casing of the servo-release) and comprising a first beak occurring, for an intermediate angular position of this latch, on the trajectory of a first stop borne by a retracting part of the breech mechanism of the weapon, and a second beak adapted, when the above-said latch is constrained imperatively to pivot due to the fact of the engagement of the above-said first beak by the above-said stop to cooperate with the slider bearing the control cam of the trigger to cause this slider to pass from its extreme rear position to its extreme forward position, and, on the other hand, a counter latch mounted pivotally on the same transverse axle as the above-mentioned latch and comprising a beak occurring, when the servo-release is at rest, in the path of a second abutment borne by a retracting part (preferably the same as that bearing the first stop) of the breech mechanism of the firearm situated behind the above-said first stop so that the engagement of the beak of the counter latch by this second stop is produced before the engagement of the first beak of the latch by the first stop and has the effect of bringing this first beak into the above-said intermediate position, elastic return means being provided to establish at rest a certain resorbable angular spacing between the latch and the counter-latch, whilst other elastic return means, distinct from the preceding ones, are interposed between the latch and the casing of the servo-release and arranged so as to constantly urge the pivoting composite assembly constituted by the latch and the counter-latch, towards the resting position for which the beak of the counter-latch is the only element of the percussion control device occurring on the path of a stop borne by a retracting part of the breech mechanism of the firearm,

and, as regards the first neutralizing means of such a control device by percussion, by a withdrawable locking member capable, when it is in active position, of locking angularly the above-said latch in a position for which its second beak is again spaced from the slider bearing the control cam of the trigger, the above-said locking member being separated from its active position when the release of the firearm is at rest.

For a servo-release whose control device by percussion and the first neutralizing means associated with this device are constructed as has just been mentioned, the only members of the servo-release actuated with a cyclic motion, at the rate of firing, on firing in bursts, will be the counter-latch and the return means inserted between the latch and said counter-latch, that is to say members which are light and few in number.

When the breech mechanism of the firearm comprises a retracting manipulating part intended to maintain in active condition one or more bolts of the breech-block when the latter is in closed position, said manipulating part comprising a petition situated between the floor of the breech-block of the firearm and the above-said breech-block, this manipulating part will advantageously be made to carry the stops intended to engage the first beak of the latch and the beak of the counter-latch.

An automatic weapon of this type, with a manipulating part, is described for example in French patent 1,602,862.

Now as regards the slider bearing the control cam of the rear and the locking device associated with said slider to hold it temporarily in a position in the vicinity of its extreme forward position and for which the rear is raised, they are constituted preferably,

as regards the slider proper, by a part cooperating with a longitudinal guide fast to the casing of the servo-release, a return spring being inserted between the above-said part and a support fast to the above-said casing to urge the part concerned constantly towards its extreme rear position,

and, as regards the locking device, by a pivoting hook, situated below the slider, articulated on a transverse axle borne by the casing of the servo-release and subject to the action of elastic return means tending to raise the above-said hook, so that the beak of this hook becomes engaged behind a retaining notch when the above-said slider occurs close to its extreme forward position for which it comes into cooperation with the above-said hook so as to imperatively oblige it to pivot.

In this case, the second neutralizing means intended to render inoperative the locking device of the slider may be constituted, in simple and advantageous manner, by a third armed lever articulated on a transverse axle borne by the casing of the servo-release and situated immediately behind the above-said hook, the front arm of this lever being able to cooperate with the pivoting hook by abutment to cause its lowering,

whilst the rear arm of said lever is subject to the action of a control catch servo-coupled to the release of the firearm so that the actuation of said release causes the intervention of the above-said catch and, consequently, the lowering of the locking hook and the freeing of the cam carrying slider, the third arm of the lever serving to limit, by abutment against the floor of the casing, the angular travel of said lever in the direction tending to separate its front arm from the beak of the locking hook.

To illustrate in more precise manner also the various features of the invention, there will now be described a preferred embodiment, but which is to be regarded as in no way limiting, with reference to the accompanying drawings in which,

FIG. 1 represents, in elevation with parts cut out and parts removed, the mechanical servo-release of a mechanical servo-release automatic firearm constructed according to the invention, said servo-release being shown in the position of firing a burst, the rear being lowered,

FIGS. 2 and 3 show the same servo-release in situations where it occurs respectively at the moment where the crew ceases to act on the release of the firearm and at the moment (following the preceding one) where the trigger is relifted and is ready to retain the movable mechanism of the breech in open position, at the beginning of the following return travel towards the front of said mechanism,

FIG. 4 shows again the same servo-release in elevation, but with other parts cut out and other parts removed so as to show certain members which were not visible in FIGS. 1 to 3, the above-said servo-release being shown, in this FIG. 4, in the situation in which it
occurs when the firearm is at rest, with the breech open and the sear lifted,
lastly, FIG. 5 is similar to FIG. 4, with the slight difference that the servo-release is shown in the situation where the crew actuates the release and thus causes the lowering of the sear.

The servo-release shown in the drawings (in which the same reference numerals denote the same elements) equipped with an automatic firearm with an open breech, for example a 20 mm automatic gun of this type, whose breech mechanism comprises a retracting part 1 which can be the breech block of the firearm or again in the case of the type described in the above-mentioned French patent, the manipulating part controlling the one or more bolts of the breech-block.

This retracting part 1 bears a first stop 1a oriented rearwardly, a second stop 1b also oriented rearwardly and situated in front of the first stop 1a and a sear engagement notch 1c oriented forwardly and situated in front of the second stop 1b, the role of these stops and the engagement notch being explained below in connection with the description of the mechanical servo-release proper (the "forward" direction of the firearm is denoted by the arrow AV in FIG. 1).

The servo-release proper comprises a sear 2 pivoted on a transverse axle 3 borne by a casing 4 attached in a removable manner to the breech casing of the firearm, said sear being subject to the action of a helicoidal spring 5 sufficiently strong to cause the disengagement and the lowering of this sear when the latter occurs in its arrest of firing position, that is to say engaged in the engagement notch 1c as shown in FIG. 4 but free to pivot downwardly as shown in FIG. 5.

This servo-release comprises also a firing control transverse axle 6, situated in front of the sear 2 and servo-coupled in rotation to a release (not shown) by conventional transmission means of mechanical, hydraulic, pneumatic, or electrical type for example. This firing control axle is shown with the release free in FIGS. 2, 3 and 4 and in its angular position for initiating firing (release actuated) in FIGS. 1 and 5.

The lifting of the sear 2 against the action of the spring 5 is obtained by the action of the cam 7 borne by a slider 8 displaceable longitudinally in a guide 9 (fast to the casing 4) against the action of the spring 10 tending to return the abovesaid slider towards its extreme rear position for which the cam 7 does not still act on the sear 2 (situation illustrated in FIG. 1).

The displacement of the slider 8 and of the cam 7 forwardly against the action of the spring 10, intervenes when the firer lets go the release of the firearm, this displacement operating by means of a neutralizable control device by percussion comprising,

on one hand, a latch 11 mounted pivotally on a transverse axle 12 situated behind the slider 8 and borne by the casing 4, the abovesaid latch 11 comprising a first beak 11a occurring, for an intermediate angular position of the latch 11, on the path of the stop 1b of the retracting part 1, and a second beak 11b adapted, when the abovesaid latch 11 pivots following the engagement of the beak 11a by the stop 1b, to imperatively oblige the slider 8 to pass from its extreme rear position (FIG. 1) to its extreme forward position (FIG. 3),

and, on the other hand, a counter-latch 13 mounted pivotally on the same transverse axle 12 and comprising a beak 13 occurring, when the servo-release is at rest (situation of FIG. 2), on the recoil path of the stop 1a of the retracting part 1, a first spring 14, interposed between the latch 11 and the counter-latch 13 holding at rest a certain resorbable angular separation between these two elements, whilst the second spring 15, interposed between the latch 11 and the casing 4, constantly urges the pivoting composite assembly formed by the latch 11 and the counter-latch 13 towards the extreme position (illustrated in FIG. 2) for which the latch 11 is stopped angularly by the support of its beak 11b against the shoulder 16 fast to the casing 4, and for which also the only element of the servo-release projecting in the recoil trajectory of the part 1 is the beak 13a of the counter-latch 13, which beak 13a occurs on the recoil trajectory of the stop 1a.

This control device by percussion is completed by the first neutralizing means capable of blocking the latch 11 angularly when the crew act on the release (case of FIG. 1), these first neutralizing means being constituted by a catch 17 pivoted on a transverse axle 18 borne by the casing 4 and subject to the action of a return spring 19 urging it towards an extreme position for which the beak 17a of this catch is engaged in a notch 11c formed in the latch 11.

The control of disengagement of the catch 17 (which control must come into play when the crew frees the release) is obtained by a finger 20 borne by a plate 21 keyed on the firing control axle 6, the position of this finger being such that, when the crew actuates the release (case of FIG. 1) the finger concerned permits the beak 17a of the catch 17 to become engaged in the notch 11c under the action of its return spring 19, whilst, when the crew lets go the release (case of FIG. 2 and FIG. 3), the abovesaid finger 20 separates the beak 17a from the notch 11c.

When the slider 8 occurs close to its extreme forward position (case of FIG. 3), it becomes temporarily prevented from retracting by a hook 22 articulated on a transverse axle 23 borne by the casing 4, said hook, which is situated below the slider 8, being subject to the action of a return spring 24 which causes the beak 22a to project from said hook behind the abovesaid slider at the moment (illustrated FIG. 4) preceding slightly the moment (illustrated in FIG. 3) when the slider 8 has arrived in extreme forward position, this assembly of the beak 22a being preferably imperatively actuated by a cooperation of two ramps R1 and R2 respectively by the slider 8 and by the hook 22.

Second neutralizing means, intended to render inoperative the locking hook 22 when the crew acts on the release, are constituted by a lever with three arms 25 articulated on the transverse axle 12 borne by the casing 4 situated by the side of the latch 11 and of the counter-latch 13. This lever with three arms 25 comprises: a front arm 25a which can cooperate with the hook 22 (by means of a roller 26 borne by the beak 22a of the hook 22) to cause the lowering of said hook and the freeing of the slider 8; a rear arm 25b occurring on the path of a spring catch 27 borne by the plate 21 and occupying a position such that, when the crew acts on the release and causes the firing control axle 6 to pivot into its firing position (case of FIG. 5), the abovesaid catch 27 constrains, by its beak 27a, the lever 25 from tilting in the direction corresponding to withdrawal of the locking hook 22; and a lower middle arm 25c intervening, when the crew ceases to act on the release (case of FIG. 4) to limit the travel of the lever 25 by support of this arm 25c on the floor of the casing 4.
The mechanical servo-release is completed by a selector device comprising a cam with flats 28 pivotable along a longitudinal axis under the effect of a manipulating lever 29, said cam being able to occupy three angular positions elastically locked by spring bolt 30, namely, a safety position, for which a finger 31 borne by this cam is engaged in a slot 21a formed in the plate 21 and prevents any movement of the axle for initiating firing 6 assumed in resting position (case of FIG. 4), a position for firing in bursts, for which the cam 28 permits the catch 17 to occupy its active position (case of FIG. 1) when the crew acts on the release, and a shot by shot firing position, shown in FIGS. 2 and 3, for which a flat 28c of the cam 28 constrains the catch 17 to remain withdrawn, even if the crew acts on the release.

The operation of such a servo-mechanical servo-release will now be explained and it would appear, for this purpose, clearer to start from the situation of firing by bursts illustrated in FIG. 1, selection cam 28 occupying its angular position “firing by bursts” for which it permits the catch 17 to come into active position when the crew acts on the release, which is obviously the case in the situation of firing by bursts.

In this situation of firing by bursts, on each shot fired the retracting part 1 causes to tilt rearwardly the counter latch 13 by engagement of its beak 13a by the stop 1e but the catch 17 having its beak 17a engaged in the notch 11c of the catch 11, the latter is prevented from tilting to gain the intermediate position where it would have been engaged by the stop 1b. The slider 8 and the cam 7 hence remain in their extreme rearward position for which the trigger 2 remains withdrawn under the action of its return spring 5. The firing hence continues in a burst as long as the crew acts on the release of the firearm, the single part moved on each shot being the counter-latch 13 whose movements are accompanied by successive compressions of the spring 14.

To interrupt this firing in a burst, the crew ceases to act on the release, which has the effect of causing the firing initiation axle 6 to pivot in anticlockwise direction, finger 20 then causing a withdrawal of the catch 17 whose beak 17a is thus disengaged from the notch 11c as seen in FIG. 2. From this moment, the latch 11 is free to tilt in the clockwise direction and, when the stop 1o of the part 1 comes to strike the beak 13c of the counter-latch 13, in the course of the withdrawal of said part, the counter-latch will cause the latch 11 to pivot, through the spring 14, to bring the front arm 11a of said latch into the part of the stop 1b. When said stop 1b encounters the above-mentioned arm 11a it imperatively constrains the latch 11 to tilt in clockwise direction against the action of the return spring 15 of the latch-counter-latch assembly, this tilting of the latch 11 having the effect of bringing back the slider 8 into its extreme forward position (against the action of the return spring 10) and of causing, through the cam 7, the lifting of the ear 2 against the action of its return spring 5, as seen in FIG. 3, said ear then occurring in the return path forwardly of the hooking notch 1c. The whole of the system remains in this situation due to the fact that the locking hook 22 has come to block the slider 8 under the action of its return spring 24 and ramps R, and R₀ as seen in FIG. 4. As soon as the hooking notch 1c encounters the ear 2, the latter retains the breech mechanism in open position and firing is interrupted (situation illustrated in FIG. 4).

If the crew acts on the release and assuming that the firing selector remains in the position of burst firing, the front arm 25a of the lever 25 causes the withdrawal of the locking hook 22, as seen in FIG. 5, which permits the slider 8 to regain, under the action of its return spring 10, its extreme rear position to which the cam 7 permits the ear 2 to be retracted under the action of its return spring 5. Moreover, the action of the crew on the release causes the retraction of the finger 20, which permits the catch 17 to come back, under the action of its spring 19, into the active position for which its beak 17a is engaged in the notch 11c of the latch 11. A new sequence of burst firing is thus initiated and it continues until the crew lets go the release.

For shot by shot firing, the weapon being stopped with its breech assembly hooked, the crew brings the selection cam 28 into the position, as shown in FIGS. 2 and 3, of shot by shot firing, that is to say into a position for which the flat 28c prevents by abutment (even if the release is actuated) the catch 17 from coming back into its active position for which its beak 17a is engaged in the notch 11c of the latch 11. If the crew then acts on the release, the locking hook 22 will be retracted by the front arm 25a of the lever 25 (as shown in FIG. 5) and the ear 2 will be retracted by its spring 5 on the recoil travel of the slider 8 permitted by the withdrawal of the above-mentioned locking hook 22. The freed breech mechanism will gain its closed position thereby ensuring the introduction and the percussion of a cartridge, then it will relock and, at the beginning of its return travel forwardly, it will be retained by the ear 2 since the latch will have relighted on the recoil travel of the breech mechanism given that the catch 17 is still held retracted by the flat 28c of the selection cam 28.

To avoid permanent support on the release from starting a second shot, the catch 27 is disengaged towards the rear with respect to the arm 25b of the lever 25, this disengagement being achieved by rotation of the latch 11 whose ramp 1b acts on beak 27a of the catch 27. When the firer ceases his action on the release, the catch 27 resumes its initial position thereby escaping from the arm 25b of the lever 25.

As is self-evident and as emerges already from the foregoing, the invention is in no way limited to those of its types of application, nor to those embodiments of its various parts, which have been more especially indicated; it encompasses, on the contrary, all modifications.

We claim:
1. Automatic firearm (especially of small or medium caliber), of the type with an open breech, equipped with a mechanical servo-release mechanism, wherein said servo-release mechanism comprises a pivoting sear mounted in a removable casing borne by the breech casing of the firearm and constantly subject to the action of a first elastic return device sufficiently powerful to cause the retraction of said sear when the latter occupies its active position for which it retains in open rearward position the breech-mechanism of the firearm, a sear control cam borne by a slide mounted in said casing capable of being displaced longitudinally forwards, against the action of a second elastic return device, starting from an extreme rearward position for which the control cam is separated from
the sear which then occurs retracted by the first elastic return device, thereby passing through a succession of intermediate positions for which the control cam cooperates with the sear by displacing it gradually and imperatively to its active position, and thereby reaching finally a locked forward position for which said control cam temporarily blocks said sear in active position,
a neutralizable percussion control device, operating by drawing energy from a retracting part of the breech mechanism of the firearm and capable when it is not neutralised, of causing said slider to pass from its extreme rearward position to its extreme forward position against the action of the abovesaid second elastic return device,
first neutralising means capable of rendering inoperative this percussion control device, said first neutralising means being servo-coupled in such a way that, on release of the firing trigger actuated by the crew of the firearm, that, when the crew acts on this release, the abovesaid first neutralising means come into action to prevent the rest of firing and to permit a burst of gunfire which continues until the crew ceases to hold said release,
and second neutralising means capable of rendering the locking device inoperative temporarily retaining the abovesaid slider in the vicinity of its extreme forward position, these second neutralising means being also servo-coupled to the abovesaid firing trigger release, in such a way that, when the crew acts on this release, the abovesaid second neutralising means come into action to unlock the slider bearing the control cam of the sear, which slider is then restored into its extreme rear position (for which the sear is retracted) by the action of the second above-mentioned elastic return device.  
2. Automatic firearm, said to be capable of rendering inoperative directly the abovesaid percussion control device and this in such a way that, in its continuous firing position, the selector renders these first neutralising means active, thus permitting continuous firing, and, in its shot by shot firing position, said selector renders said first neutralising means inactive, the first shot fired then causing the arrest of firing by means of the percussion control device.  
3. Automatic weapon according to claim 1, wherein its percussion control device, and the first neutralizing means associated with this device, are constituted, as regards the percussion control device proper, by, on one hand, a latch mounted pivotally on the same transverse axle as the above-mentioned latch and comprising a beak occurring, when the servo-release is at rest, in the path of the second stop borne by a retracting part (preferably the same as that bearing the first stop) of the breech mechanism of the firearm and situated behind the abovesaid first stop so that the engagement of the beak of the counter-latch by the latter stop occurs before the engagement of the first beak of the latch by the first stop and has the effect of restoring the first beak into the abovesaid intermediate position, elastic return means being provided to establish at rest a certain angular separation resorbable between the latch and the counter-latch, whilst other elastic return means, separate from the preceding one, are inserted between the latch and the casing and arranged so as to constantly urge the pivotable composite assembly constituted by the latch and the counter latch towards the resting position for which the beak of the counter latch is the only element of the percussion control device occurring in the path of a stop borne by a retracting part of the breech mechanism of the firearm, and, as regards the first neutralizing means for such a percussion control device, by a withdrawable locking member, capable, when it is in active position, of locking the abovesaid latch angularly in a position of which its second beak is again separated from the slider bearing the control cam of the trigger, the abovesaid locking member being separated from its active position when the release of the firearm is at rest.  
4. Automatic firearm according to claim 1, wherein the slider bearing the control cam of the sear, and the locking device associated with said slider, are constituted, as regards the slider proper, by a part cooperating with a longitudinal guide fast to the casing of the servo-release, a return spring being inserted between the abovesaid part and a support fast to said casing to urge the part concerned constantly towards its extreme rear position, and, as regards the locking device, by a pivoting hook, situated beneath the slider, pivoting on a transverse axle borne by the casing of the servo-release subject to the action of elastic return means tending to raise the abovesaid hook, so that the beak of this hook becomes engaged behind a retaining notch when the abovesaid slider occurs close to its extreme forward position.  
5. Automatic firearm according to claim 4, wherein the second neutralising means intended to place out of operation the pivoting locking hook immobilizing the slider temporarily are constituted by a free arm lever articulated on a transverse axle (preferably the axle of the latch) borne by the casing of the servo-release and situated immediately behind the abovesaid pivoting hook, the front arm of this lever being able to cooperate with the pivoting hook through a stop to cause its lowering, whilst the rear arm of said lever is subject to the action of a control catch servo-coupled to the release of the firearm, so that the actuation of said release causes the intervention of the abovesaid catch and consequently, the lowering of the locking hook and the freeing of the cam carrying slider, the third arm of the lever serving to limit, by abutment against the floor of the casing of the servo-release, the angular travel of said lever in the direction tending to space its front arm from the beak of the locking hook.