AUTOMATIC PISTOL CALIBRE .35 WITH SLOW AND RAPID RHYTHM OF FIRING, AND MAGAZINE CONTAINING 25 CARTRIDGES

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Fig. 2

Fig. 4
AUTOMATIC PISTOL CALIBRE 6.35 WITH SLOW AND RAPID RHYTHM OF FIRING, AND MAGAZINE CONTAINING 25 CARTRIDGES

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The present invention relates to an automatic pistol, calibre 6.35, with slow and rapid rhythm of firing and a magazine containing 25 cartridges.

The purpose of this invention is that of obtaining a weapon having a minimum weight and dimensions, having the possibility of firing automatically and very rapidly, as well as of firing one single shot at a time, exploiting the possibilities offered by the closure system at mass inertia, and such as to have the ballistic possibilities which are characteristic of weapons having a far greater calibre.

Said purpose is obtained by subdividing the inertia mass of the closure system in two bodies gliding in the receiver of the weapon and rigidly connected between themselves; the rear body contains the bolt with a stationary firing pin and is guided in the receiver, while the fore body glides on the barrel of the weapon where it is wound the retractor spring.

It is a characteristic of this invention the fact that there is only one sear and one trigger operating two firing levers which effect the two types of firing according to the position given to a fire controlling member which may be operated from outside the weapon.

It is also characteristic the fact that the sear acts on the fore body of the inertia mass, i. e. on that gliding on the barrel, allowing thus the functional movements of the weapon to be distributed in a particularly suitable way in respect of the features of the weapon having a small calibre, i. e. easy handling, limited dimensions, absence of projecting parts, etc.

The invention allows also a magazine with a double row of cartridges, containing twenty-five shots to be placed in the handle of the weapon and a sufficiently long barrel to be adopted. It is possible, least of all, to embody the handle as well as the box containing the firing mechanism, in a pressed sheet, and, if desired, it is possible also to embody said parts in a single piece, also in pressed sheet.

A preferred form of embodiment of this invention is illustrated in the attached drawings, wherein:

Fig. 1 shows an external view of the weapon from the left side, with the bolt closed, without magazine;

Fig. 2 shows a partially cross-sectional external view of the weapon, from the right side;

Fig. 3 shows a vertical longitudinal section of the weapon along the line III—III of Fig. 5;

Fig. 4 shows the detail of the firing mechanism in the position of single shot, sectioned along the line IV—IV of Fig. 5;

Fig. 5 shows the cross-section of the weapon along the line V—V of Fig. 1;

Fig. 6 shows the cross-section of the weapon along the line VI—VI of Fig. 3;

Fig. 7 shows the cross-section of Fig. 3 along the line VII—VII, and

Fig. 8 shows diagrammatically the positions of the fore elements of the inertia mass in respect of the rear, when the bolt is closed, and, in dotted line, when the bolt is opened.

With reference to the drawing, the main parts of the weapon are: a cylindrical receiver 1, wherein glides the inertia mass formed by two hollow cylinders 2 and 3 (Fig. 3) connected by strong lateral links 4 (Fig. 2); the barrel 5 ending at its fore extremity with a threaded portion 6 having a minor diameter; a box 7 containing the firing mechanism which may be integral or not with the handle.

The receiver 1 is inserted at its front extremity in an annular bushing, which ends the fore part of the box 7, and at its rear it is inserted on the vertical element 9, forming the ejector tooth.

Behind the ejector 9, the receiver 1 has a tooth 10 inserted in the block 11, which supports the ejector 9.

This way the receiver is fixed at its rear, while its fore part resting against the bushing 8 of the box 7, is fixed by the step 12 ending the smooth part of the barrel, beyond which the barrel extends with the aforecited threaded portion 6 on which is inserted the bushing 8 and on which nut 13 is screwed which simultaneously secures the receiver and the barrel to the casing 7.

The receiver bears: at its fore part the foresight 14, and at the rear a sight 15, roughly in correspondence with the handle 16 of the weapon, an upper opening 17 for the ejector of the empty shell and a corresponding lower opening 18 (Fig. 5) through which the cartridge to be fired is extracted from the magazine.

The barrel, which has a four-six right-hand rifling, is externally smooth, and ends at the rear with a breech ring 19 having a conical seat 20 facilitating the introduction of the cartridge (Fig. 6) with a lower projection which forms the engagement member between the barrel and the mechanism box.

Lateral said seat is limited by two planes 22 forming the guiding guides of the lateral links 4 connecting the two bodies 2 and 3 of the inertia mass.

The helical retractor spring 23 encircles the barrel 5 and is inserted between the fore body 2 and the barrel 3 so that said spring is comprised between said fore body and the step limiting the front of the breech ring 19.

The rear cylinder 3, axially bored, contains the cylindrical body 24 forming the actual bolt, with a large groove 25 in its lower part in order to allow the passage of the ejector tooth 9.

At the centre of the fore surface of the bolt is placed a stationary firing pin 26. At the upper fore part of the cylinder 24 is pivoted the extractor 27, pressed by a spring 59 (Fig. 3).

The cylinder 24 bearing by a step on the fore extremity of the cylinder 3, ends, at its rear, beyond the extremity of said cylinder 3, with a threaded portion 29 on which is screwed the knurled and threaded nut 30 which is the grip means for cocking the weapon, by pulling backward the inertia mass and compressing the spring 23.

The firing mechanism comprises a trigger 31 pressed by a spring 32 and pivoted on the shaft 33 which passes through the lateral cheeks of the mechanism box and which is fixed on the right cheek as it will be described herebelow.

On the upper part of the trigger 31 are pivoted, on a single shaft 34, two firing levers, and precisely a left lever 35 (Fig. 4) serving for the single shot, and a right lever 36 (Fig. 3) serving for the automatic firing.

Both these levers act on the sear 37 which is pivoted on the shaft 38 and is provided in its lower part with two teeth 39 and 40, placed side by side, and which may be engaged respectively by the single shot firing lever 35 or by the automatic firing lever 36.

The sear 37 has in its upper part a corner edge 41 which may engage with its edge turned toward the handle, the fore end of the cylinder 2 of the inertia mass, in order to block it ready to fire, or in safety with
the bolt open, and with its rear surface on an inclined plane 42 of the rear part of cylinder 2, in order to block the inertia mass in safety position with the bolt closed.

The seat 37 is pressed by the spring 43 to remain in its open position, i.e. in its position of engagement with the cylinder 2.

In order to obtain the two types of firing which may be effected by the weapon, near the extremity of the seat is placed the fire-control 44 which is formed by a small cylinder pivoted on the shaft 45 supported by the lateral walls of the mechanism box and which may be operated by means of a flat lever 46 arranged outside the left cheek. The fire-control may have three positions corresponding to the single shot to the automatic shot and to the safety position, respectively.

Said positions are defined by small seats provided in the left cheek of the weapon wherein an internal projection of the flat lever 46 may be engaged, and remain there, by effect of an internal spring 47 (Fig. 5) acting on the fire-control 44, keeping the latter adherent against the right cheek of the weapon.

In the position corresponding to the single shot, particularly shown in detail in Fig. 4, the small cylinder 44 engages the right lever 36 (Fig. 3) keeping it lowered and preventing it from engaging in its turn the tooth 40 of the seat 37.

A sliding portion of the cylinder 44 allows the left lever 35 to oscillate. Said lever is provided with a tooth 48 suitable to engage the tooth 39 of the seat 37; beyond the tooth 48 the lever 35 is continued by an extension 49 on which may act the cylinder 2 of the inertia mass.

The single shot operation occurs as follows: if the weapon is in ready to shoot position, i.e. having its inertia mass at the rear and the spring 23 compressed, the corner edge 41 of the seat bears against the fore extremity of the cylinder 2 (marked in Fig. 4 in dotted line).

By operating the trigger, the rotation around the shaft 33 causes the lever 35 to advance, and this latter is pressed by the spring 50 to lift.

In these conditions, owing to the position of the fire-control 44, the tooth 48 of this lever engages the tooth 39 of the seat 37, and causes the rotation of said seat around the shaft 38; this disengages the fore surface of cylinder 2 from the corner edge 41, and the spring is allowed to expand and therefore the entire inertia mass is allowed to advance. During the closing stroke the fore surface of the bolt extracts a cartridge from the magazine and carries it in its longitudinal position. It may be noted that the action of the firing pin on the percussion cap of the cartridge occurs some hundredth of second before the cartridge has reached its actual closure position, i.e. while the bolt is still in forward movement.

The start of the bullet occurs therefore at the moment when the complete closure position is reached and then, the inertia mass, practically pushed by the empty shell, the cartridge case of which bears on the fore surface of the bolt, begins its stroke backwards.

Only after the extreme tip of said stroke the empty shell would tend to detach from the bolt, but in this case it remains engaged by the extractor 27. When the inertia mass has reached the end of the opening stroke, the lower part of the shell hits the ejector tooth 9 which causes the upset of the shell upwards and the ejection of this latter through the opening 20.

It is to be noted that already during the closure stroke, the cylinder 2 has operated the head 49 of lever 35 so as to lower this latter and disengage the tooth 39 of the seat from the tooth 48 of the lever.

Consequently when the inertia mass reaches the end of the recoil stroke, the seat 37, pressed by the spring 43, is free to rotate and place itself with its corner edge 41 before the extremity of cylinder 2, stopping the inertia mass in its recoil position.

The weapon remains therefore open, and in order to cause the successive shot it is necessary to release the trigger in order to bring back the firing lever and to operate successively the trigger in order to cause the lowering of the seat.

When the weapon is on the contrary disposed in position for automatically repeated shooting (Fig. 3), the fire-control 44 bears a missing portion on the lever 36 which has a tooth 52 suitable to engage the tooth 40 of the seat 37.

As the lever has no extension on which the inertia mass during its stroke may act, the operation of the trigger causes the lowering of the seat 37 which remains engaged by the lever and therefore remains lowered as long as the trigger is not released.

In this case the inertia mass performs without obstacle its opening and closure strokes, and the shots continue until the rear stops them, owing to the release of the trigger.

When the fire-control 44, through the lever 46 is placed in safety position (Fig. 8), the former is placed so as to keep permanently having a length substantially inserted under the lower surface of the latter; the fire-control lowers contemporaneously the two fire levers so as to prevent their engagement with the teeth of the seat.

In this case if the inertia mass is its back position (weapon open) as shown in dotted line in Fig. 8, the weapon remains open, while if the weapon was initially closed, the rear of the corner edge 41 adheres against the inclined plane 42 of the cylinder 2 of the inertia mass, preventing this latter from opening.

It results from the above specification that the mechanism is passed through only by three shafts, and precisely: by shaft 33 on which is pivoted the trigger 31, by shaft 45 on which is pivoted the fire-control 44 and by shaft 38 on which is pivoted the seat 37.

Shafts are introduced through the left cheek of the weapon and project on the right cheek where they are fixed by means of a flat lever, 53, provided with oval holes the narrow part whereof may be engaged within small grooves made in the extremities of the shafts.

The lever may be operated by means of a button 55 and is fixed by a shaft 54 which engages, when the shafts are fixed, a corresponding hole of the blade 53.

The shaft 54 passes through the seat 37 within an oval hole and constitutes a limiter for the oscillation of the rear closing position. It is similar to the spring 47 which acts on the fire-control 44 in order to define the positions of its control lever 46.

We claim:

1. An automatic pistol for single shot and for rapid fire comprising a casing, a handle on said casing, a receiver mounted on said casing, a barrel fixed to the receiver having at the rear end a flange, a recovery spring mounted on said barrel, an inertia member formed with two hollow cylindrical bodies spaced from each other and rigidly connected to each other to form a single body, said inertia member being substantially equal to the length of the receiver, the fore cylindrical body of the inertia member being slideable on said barrel within said receiver to compress said recovery spring and recoupable from a rear capped position to a rear firing position and the said rear cylindrical body being guided within said receiver, a cylindrical bolt coaxially introduced in said rear cylindrical body connected and movable therewith, a rear arranged below said barrel manually operable to abut against the fore surface of said fore cylindrical body when the latter moves from the cocked to the firing position.

2. An automatic pistol for single shot and for rapid fire comprising a casing, a handle on said casing, a receiver mounted on said casing, a barrel fixed to said receiver having at the rear end a flange, a recovery spring
mounted on said barrel, an inertia member formed with two hollow cylindrical bodies spaced from each other and rigidly connected to each other by means of links to form a single body, said inertia member having a length substantially equal to the length of said receiver, the fore cylindrical body of the inertia member being slidable on said barrel within said receiver to compress said recovery spring and reciprocable from a rear cocked position to a fire firing position and said rear cylindrical body being guided within said receiver, a cylindrical bolt coaxially introduced in said rear cylindrical body connected thereto and movable therewith, a seat arranged below said barrel and selectively manually operable to abut against the fore surface of said fore cylindrical body when the latter moves from the cocked to the firing position, a trigger mounted on said casing in operative connection with said rear for the selective operation of the latter, said rear being provided in its lower part with two teeth laterally spaced apart from each other and with a recess, two firing levers operable by said trigger, the first one of said levers being arranged for a single shot and the second lever for rapid fire, said first lever being provided with a tooth arranged to engage one of the teeth of the rear and with a projection arranged to be operated by the inertia member during the rearward movement of the latter to be disengaged from said rear, said second lever being provided with a tooth to engage the other tooth of the rear and means for rendering operative separately said two firing levers.

3. An automatic pistol for single shot and for rapid fire comprising a casing, a handle mounted on said casing, a receiver having at the rear end a flange, a recovery spring mounted on said barrel, an inertia member formed with two hollow cylindrical bodies spaced from each other and rigidly connected to each other by means of links to form a single body, said inertia member having a length substantially equal to the length of said receiver, the fore cylindrical body of the inertia member being slidable on said barrel within said receiver to compress said recovery spring and reciprocable from a rear cocked position to a fire firing position and said rear cylindrical body being guided within said receiver, a cylindrical bolt coaxially introduced in said rear cylindrical body connected and movable therewith, a seat arranged below said barrel and selectively manually operable to abut against the fore surface of the fore cylindrical body when the latter moves from the cocked to the firing position, a trigger mounted on said casing in operative connection with said rear for the selective operation of the latter, said rear being provided in its lower part with two teeth laterally spaced from each other and with a recess, two firing levers operable by said trigger, the first one of said levers being arranged for a single shot and the second lever for rapid fire, said first lever being provided with a tooth arranged to engage one of the teeth of the rear and with a projection arranged to be operated by the inertia member during the rearward movement of the latter to be disengaged from said rear, said second lever being provided with a tooth to engage the other tooth of the rear, a cylindrical fire controlling member provided on its periphery with plane portions, said fire controlling member being in operative connection with said rear and with the two firing levers and being arranged to rotatably assume three positions, in the first position to lock the rear against the rear surface of the fore cylindrical body of the inertia member when the latter is in firing position, in the second position to permit the operation of the firing lever for the single shot while simultaneously locking the lever for the rapid fire and in the third position to permit the operation of the firing lever for the rapid fire while simultaneously locking the firing lever for the single shot.

References Cited in the file of this patent

UNITED STATES PATENTS

693,106 Burgess .......................... Feb. 11, 1902
956,431 Schmeisser ......................... Apr. 26, 1910
1,425,808 Thompson ......................... Aug. 15, 1922
1,437,889 Eckhoff ........................ Dec. 5, 1922
1,561,756 Tucker ........................ Nov. 17, 1925
2,464,409 Mosberg ........................ Mar. 15, 1949
2,495,428 Simonson et al. ............... Jan. 24, 1950
2,512,014 Eglin .......................... June 20, 1950
2,549,162 Blacker ........................ Apr. 17, 1951

FOREIGN PATENTS

20,277 Great Britain ........................ of 1909
503,549 France .......................... June 12, 1920
274,424 Italy ........................... Mar. 21, 1930