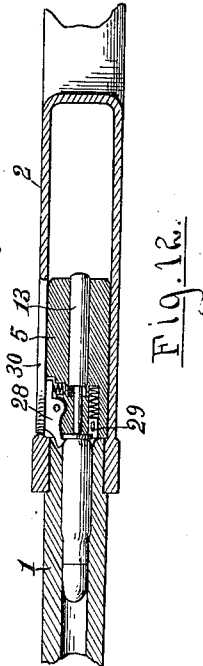
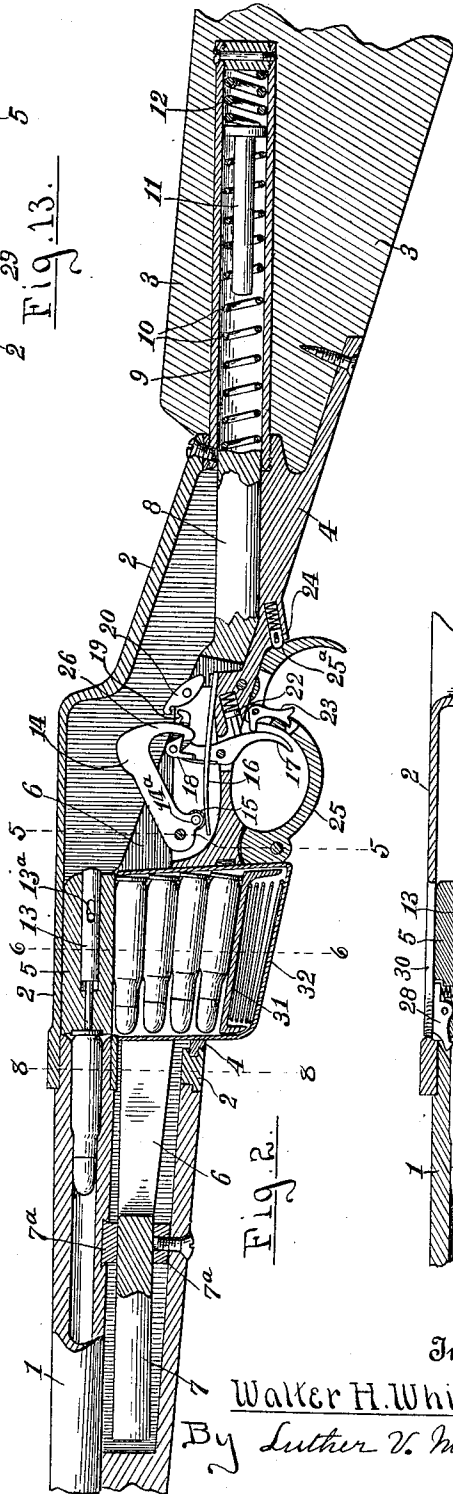
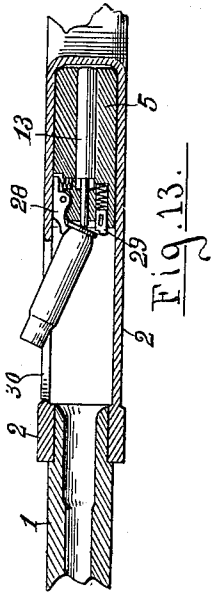
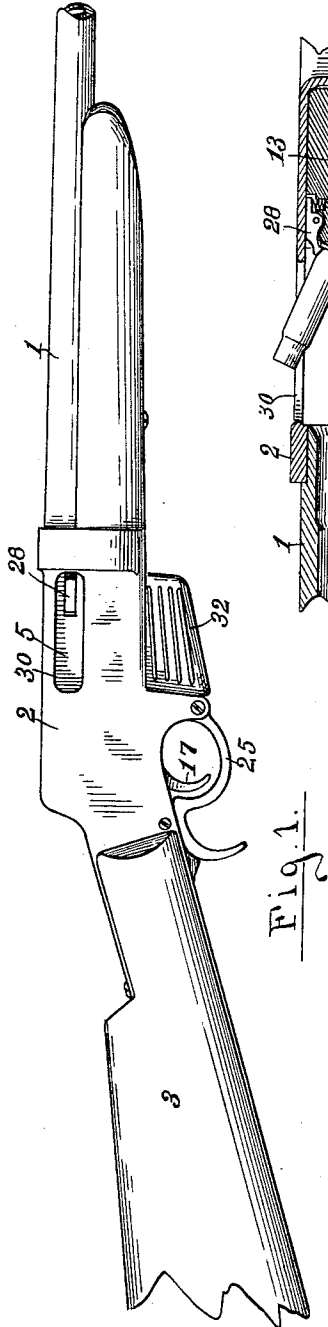


1,019,937.

W. H. WHITTIER.  
AUTOMATIC FIREARM.  
APPLICATION FILED MAY 15, 1911.

Patented Mar. 12, 1912.

3 SHEETS—SHEET 1.



Witnesses  
Harold C. Van Antwerp  
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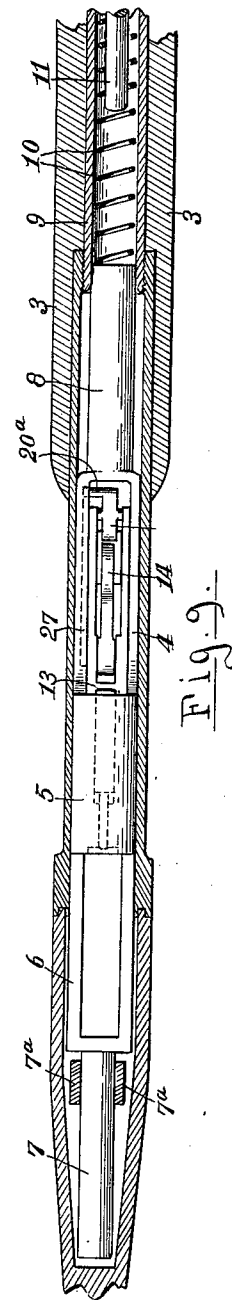
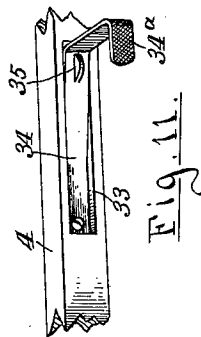
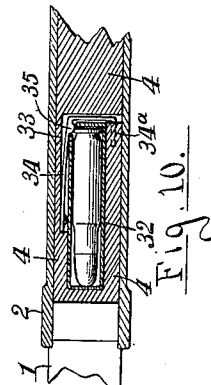
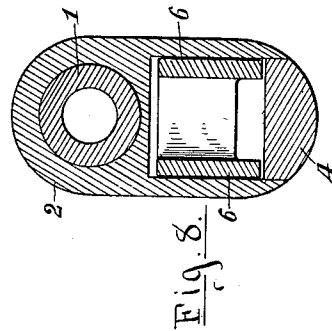
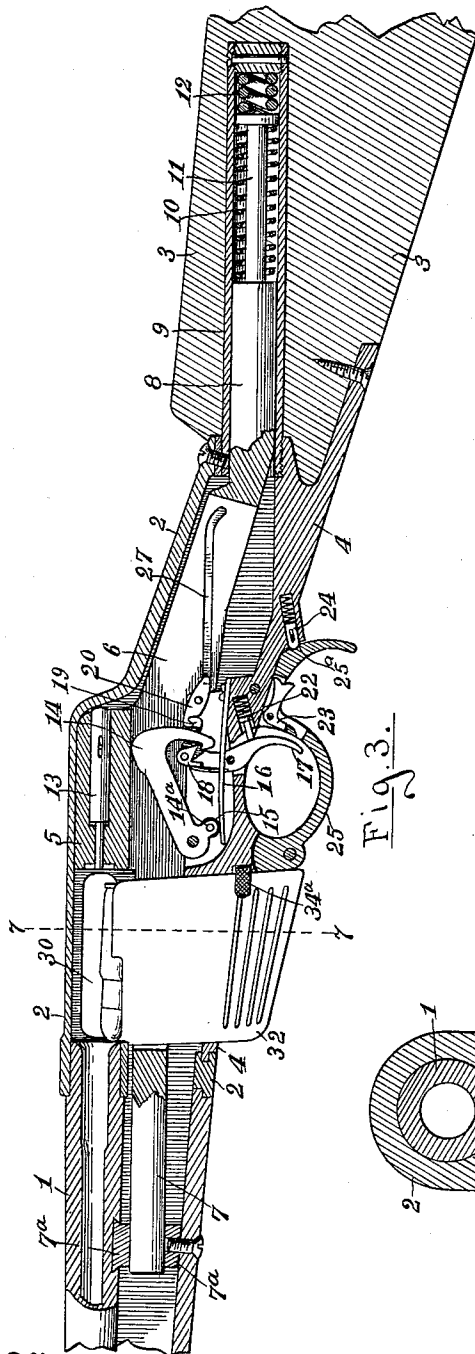
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3 SHEETS—SHEET 2.



Witnesses

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3 SHEETS—SHEET 3.

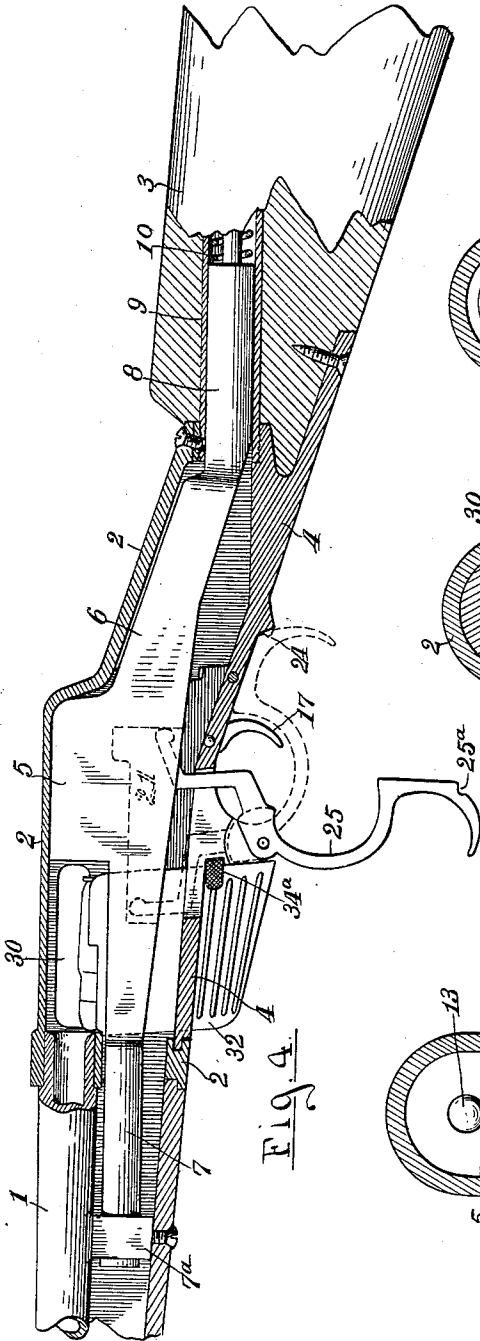


Fig. 4.

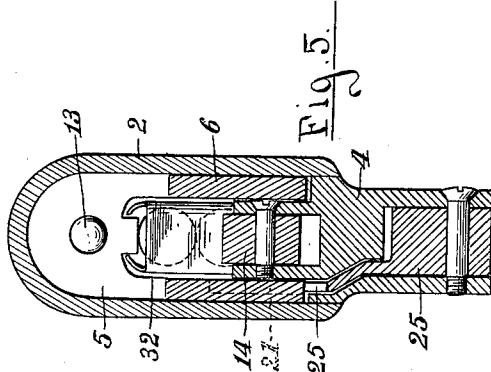


Fig. 5.

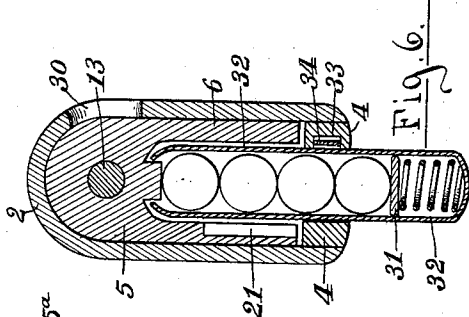


Fig. 6.

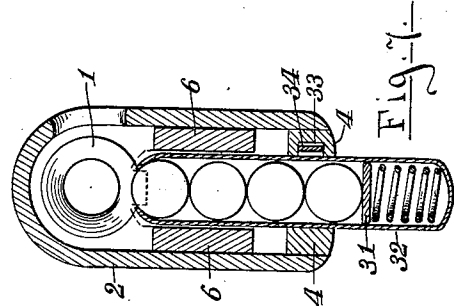


Fig. 7.

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# UNITED STATES PATENT OFFICE.

WALTER H. WHITTIER, OF GRAND RAPIDS, MICHIGAN.

## AUTOMATIC FIREARM.

1,019,937.

Specification of Letters Patent.

Patented Mar. 12, 1912.

Application filed May 15, 1911. Serial No. 627,177.

*To all whom it may concern:*

Be it known that I, WALTER H. WHITTIER, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Automatic Firearms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in automatic firearms and more particularly to the type operated by the recoil of the explosion, and its object is to provide a device simple and comparatively cheap in construction, and effective in operation and to provide the same with various new and useful features hereinafter more fully described and particularly pointed out in the claims reference being had to the accompanying drawings, in which:—

Figure 1 is a side elevation of a rifle embodying my invention, a portion of the butt stock and barrel being broken away; Fig. 2 is an enlarged sectional elevation of the same showing the gun ready to be fired; Fig. 3 is also a vertical section showing the cartridge magazine in elevation, the breech block forced backward by the recoil of the fired cartridge and a fresh cartridge in position to enter the breech of the barrel; Fig. 4 is a view partially in vertical section and partially in elevation showing the breech block and guide slid back by movement of the manually operated lever; Figs. 5, 6, and 8 are respectively enlarged transverse sections on the lines 5—5, 6—6, and 8—8 of Fig. 2; Fig. 7 is an enlarged transverse section on the line 7—7 of Fig. 3; Fig. 9 is a plan view partially in section showing the slidable breech block and its guiding means; Fig. 10 is a sectional detail taken through the frame and the cartridge magazine showing the magazine retaining catch; Fig. 11 is a perspective detail of the magazine retaining catch; Fig. 12 is a section detail of the shell ejecting mechanism as it grasps the shell, and Fig. 13 shows the same in the act of throwing the shell from the gun.

Like numbers refer to like parts in all of the figures.

The principal object of my invention is to

provide simple effective means whereby the recoil of the fired cartridge will eject the empty shell, cock the hammer and reload the gun with a fresh cartridge. To accomplish this I employ the mechanism which is hereafter described. This mechanism being particularly adapted to be used on guns which shoot a single bullet cartridge.

1 is the barrel of the gun which is rigidly attached to the frame or housing 2. The housing is arch shaped at the top and open at its lower side, this opening being filled by a base 4 to which the butt stock 3 of the gun is attached. Suitable fastenings are provided to hold the base 4 in position in the housing 2. The breech of the barrel opens into the housing and is normally closed by a breech block 5 which is mounted on a carriage 6. This carriage has a longitudinal movement within the housing 2 and is supported by its cylindrical end members 7 and 8 which are slidably mounted respectively in a bearing 7<sup>a</sup> and a tube 9. The bearing 7<sup>a</sup> is attached to the under side of the barrel of the gun and the tube 9 is in a suitable hole bored in the butt stock. The slide member 8 acts as a plunger in the tube 9 and a spring 10 in the tube bears against the end of the plunger and normally holds the breech block 5 against the end of the barrel. The firing pin 13 is mounted in the breech block and slightly projects outside of it so that it may be engaged by the hammer 14 to fire the cartridge. When the cartridge is fired the recoil from the explosion will drive the breech block and carriage backward within the housing and compress the spring 10 in the tube 9. To cushion the force of the recoil at the end of the stroke of the carriage the plunger 8 engages a pin 11 as it nears the end of its stroke. This pin 11 is held forward by a spring 12 which is somewhat stiffer than the spring 10 and which is also located within the tube 9. The pin 11 limits the compression of the spring 10 and transmits the pressure of the spring 12 directly to the plunger thus protecting the weaker spring 10 from undue pressure thereon.

The hammer 14 is pivoted in the base plate 4 and is provided with a lug 14<sup>a</sup> in which is mounted a roller 15. A spring 16 attached to the base plate engages the roller 15 and exerts an upward pressure on the

hammer. In order to hold the hammer cocked it is provided with a downward extension 26 having a hook shaped end which engages a spring actuated catch 18 on the upper end of the trigger 17. This trigger 17 is also pivoted in the base plate 4 and extends downward through a slot in the same and terminates at its lower end in a finger piece which when pulled backward releases the hammer 14 allowing it to swing upward under tension of the spring 16 and strike the projecting end of the firing pin. The hammer is forced downward and is automatically cocked by the breech block as it travels backward under impulse of the recoil. In order to prevent the trigger from being held back and prevent the hammer from being cocked the upper end of the trigger is provided with a backward extending arm 19 which terminates in a hook, and a catch 20 pivoted in the base plate 4 is provided with a recess in one end which the hooked end of the arm 19 will engage. The recessed end of the catch 20 is arranged to be swung downward to engage the hooked end of the arm 19 while the carriage 6 is in motion. In this position the trigger will catch the hammer as it is lowered and hold it. Should the operator inadvertently hold the trigger backward when the carriage is in motion the inclined faces of the recess in the catch 20 and the hook 19 will draw the trigger to the desired position as the catch is lowered. The catch is actuated by a pin 20<sup>a</sup> in its lower end which traverses a cam groove 27 in the carriage, positioned to hold the catch in engaging position except at the rear end which turns downward to release the catch. By this means the trigger is locked while the carriage is in motion and is released only when the breech of the barrel is closed and the mechanism in position to be fired. The trigger is held normally in operative position by a spring actuated plunger 22 located in the base plate 4. A safety device is provided which comprises a bell crank lever 23 pivoted in the lever 25 and when in operative position as shown in Fig. 2 it engages the finger piece of the trigger preventing it from being pulled backward release the hammer.

It has been stated that the recoil from the explosion of the cartridge drives the breech block and carriage backward and as the breech block travels backward it draws the empty shell from the barrel, the shell being grasped at one side of its rim by an extractor catch 28 which is located in the breech block. An opening 30 is provided in the side of the housing 2 opposite the spring catch 28 and as the empty shell is drawn opposite this opening it is thrown outward by a spring plunger 29, which presses against the rim of the shell opposite the spring catch. The cartridges are carried in a magazine

32 which is located just back of the breech of the barrel and directly under the breech block when it is in operative position. These cartridges are arranged in a single vertical tier and are forced upward by a spring actuated follower 31. When the breech block is in operative position the upper cartridge engages the under surface of it as shown in Figs. 2 and 6 but when the breech block is slid back it releases the cartridges allowing them to rise until the upper one is stopped by the inturned edges of the magazine as shown in Figs. 3, 4 and 7. In this position the upper cartridge lies in the path of the breech block with the bullet pointing into the breech of the barrel and as the breech block returns this upper cartridge is engaged by it and slid from the magazine into the barrel and grasped by the spring catch 28 and the next cartridge below engages the lower surface of the breech block. The cartridge magazine is inserted from below through an opening in the base plate 4 and is detachably held in place by a spring catch 34 which is fastened in a groove 33 in the base plate. The spring catch has a projecting lug 35 which enters a corresponding slot in the magazine wall and when in position holds the magazine securely in place. The spring 34 is bent to extend back of the magazine and terminates in a finger piece 34<sup>a</sup> which is accessible from the outside of the gun and when pressed removes the lug 35 from the slot in the magazine which may be withdrawn to be refilled with fresh cartridges.

When loading the gun after it has been completely discharged and there is no cartridge in the barrel to be fired there will of course be no automatic movement of the breech block and carriage. It is then necessary to provide means for manually operating this mechanism to load the barrel with the first cartridge. To do this I provide a lever 25 pivoted in downwardly extending lugs on the base plate. This lever extends backward and beneath the trigger to form a guard for the same and is held in inoperative position by a spring plunger 24 in the base plate which engages a notch 25<sup>a</sup> in the lever. This lever extends forward and upward being of an irregular shape to avoid the other parts of the mechanism and its upper end lies within the slot 21 which is provided in the side of the carriage. This slot is so shaped that when the lever is in inoperative position it will not interfere with the automatic action of the carriage but when it is desired to manually slide the carriage backward a downward and forward movement of the rear end of the lever causes the forward end to engage the back edge of the slot 35 and move the carriage together with the breech block backward in the housing giving it the same movement that it would

take in its automatic operation. Thus the first cartridge is entered into the barrel.

The operation of this automatic gun is as follows:—The cartridge magazine which  
5 contains the cartridges is inserted through the opening provided for it in the base plate and is held in its operative position by the lug on the spring 34. The first cartridge is loaded into the barrel by manually operating  
10 the lever 25 as before described which slides the carriage and breech block backward allowing the upper cartridge to attain a position in the path of the breech block. The lever is now manually returned to its  
15 inoperative position and the spring 10 forces the carriage and breech block forward and carries the upper cartridge into the barrel and the breech block closes the breech in the barrel and at the same time  
20 the spring catch 28 grasps the rim of the cartridge. The backward movement of the breech block has also forced the hammer downward and cocked it by engaging its hooked projection 26 with the spring catch  
25 18 located on the upper end of the trigger. The gun is now ready to be fired. By pulling the trigger 17 the hammer is released and flies upward under tension of the spring 16 and strikes the projecting end of the  
30 firing pin. This explodes the charge in the cartridge sending the ball through the barrel of the gun and the recoil of the explosion forces the breech block and carriage backward in the housing drawing the empty  
35 shell from the barrel and ejecting it through the opening in the side of the housing. This backward movement of the carriage compresses the spring 10 and the spring 12 cushions the force of the movement of the  
40 carriage at the end of its stroke and also aids in starting it on its return stroke. When the carriage is in its backward position the top cartridge in the magazine is forced upward by the spring actuated follower 31 and  
45 as the breech block returns to place it is caught and slid from the magazine into the barrel. During the same operation the hammer is again cocked by the backward movement of the breech block and is again  
50 ready to be released to fire the fresh cartridge.

Neatness of design and accessibility are one of the main features made possible by this invention. It will be noticed that the  
55 whole firing mechanism is located upon and attached to the base plate 4 and a minimum number of fastening screws, pivot pins, etc., are visible from the outside of the gun. By removing the base plate 4 the entire  
60 mechanism may be taken out and exposed to view for inspection or repair.

What I claim is:—

1. An automatic firearm, comprising a barrel open at the breech, a reciprocable  
65 breech block to close the barrel, a plunger

at the rear of the breech block connected thereto and movable therewith, a coiled spring engaged by the end of the plunger and compressed thereby, a pin in said spring also engaged by the end of the plunger when  
70 said spring is fully compressed and a stronger coiled spring directly engaging the rear end of the pin and compressed thereby.

2. An automatic firearm, comprising a barrel open at the breech, a breech block to  
75 close the barrel, a reciprocable carriage on which the breech block is mounted, end members supporting the carriage, a bearing attached to the barrel in which bearing the forward end member is slidable, a tube in  
80 which the rear end member is slidable, a spring in the tube engaging the rear end member, a pin within the rear of the spring and engaged by the rear end member and a second spring engaging the rear end of the  
85 pin.

3. An automatic firearm, comprising a barrel open at the breech, a movable breech block to close the barrel, a reciprocable carriage supporting the breech block, a base be-  
90 low the carriage, a magazine extending upward through the base and carriage and below the breech block when in forward position, a hammer pivoted on the base, a down-  
95 ward extension on the hammer having a hook on the end, a trigger having a catch to engage said end, an arm on the trigger having a hook, a pivoted catch to engage the said hook and hold the trigger from releasing the hammer, a laterally projecting mem-  
100 ber on the catch, the carriage having a groove to receive the said member and operate the catch.

4. An automatic firearm, comprising a reciprocable breech block, a hammer engaged  
105 by the breech block and moved thereby to cocked position, a trigger adapted to engage and hold the hammer in cocked position and to release the same, a hook on the trigger, a pivoted catch to engage the hook  
110 and hold the trigger, a pin on the catch, and a carriage supporting the breech block having a groove to receive the pin and hold the catch engaged with the hook during the travel of the carriage, and to disengage the  
115 catch when the carriage and breech block are in forward position.

5. In an automatic firearm, a barrel open at the breech, a movable breech block to close the barrel, a reciprocable carriage on  
120 which the breech block is mounted, a base on which the hammer mechanism is mounted, a lever forming a trigger guard pivoted in the base and extending into an elongated recess in the carriage to move the carriage  
125 rearward.

6. An automatic firearm, comprising a housing, a removable base to the housing, a barrel, a breech block, a carriage supporting the breech block and having a recess to re-  
130

ceive a lever, a hammer pivoted on the base, a trigger pivoted in the base and having a catch to engage and hold the hammer, a hook on the trigger, a catch pivoted on the  
5 base to engage the hook, a pin on the catch to engage and traverse a groove in the carriage to operate the catch, and a lever pivoted on the base and forming a trigger guard

and also extending upward into a recess in the carriage to move the carriage.

10

In testimony whereof I affix my signature in presence of two witnesses.

WALTER H. WHITTIER.

Witnesses:

HAROLD O. VAN ANTWERP,  
LUTHER V. MOULTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."