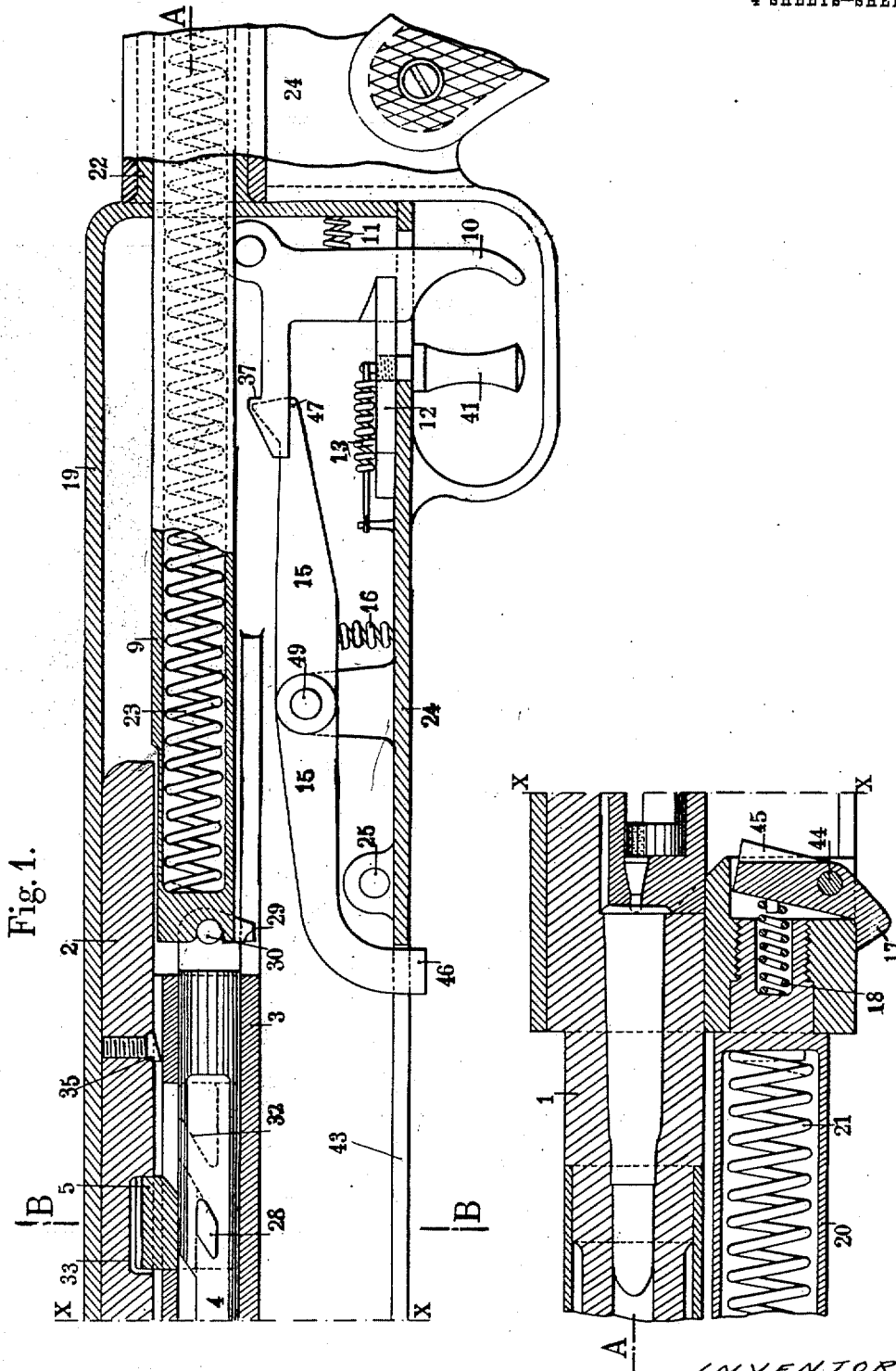


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 AUTOMATIC FIREARM.
 APPLICATION FILED OCT. 20, 1909.

981,210.

Patented Jan. 10, 1911.

4 SHEETS—SHEET 1.



WITNESSES

W. P. Burk
 A. F. Heuman

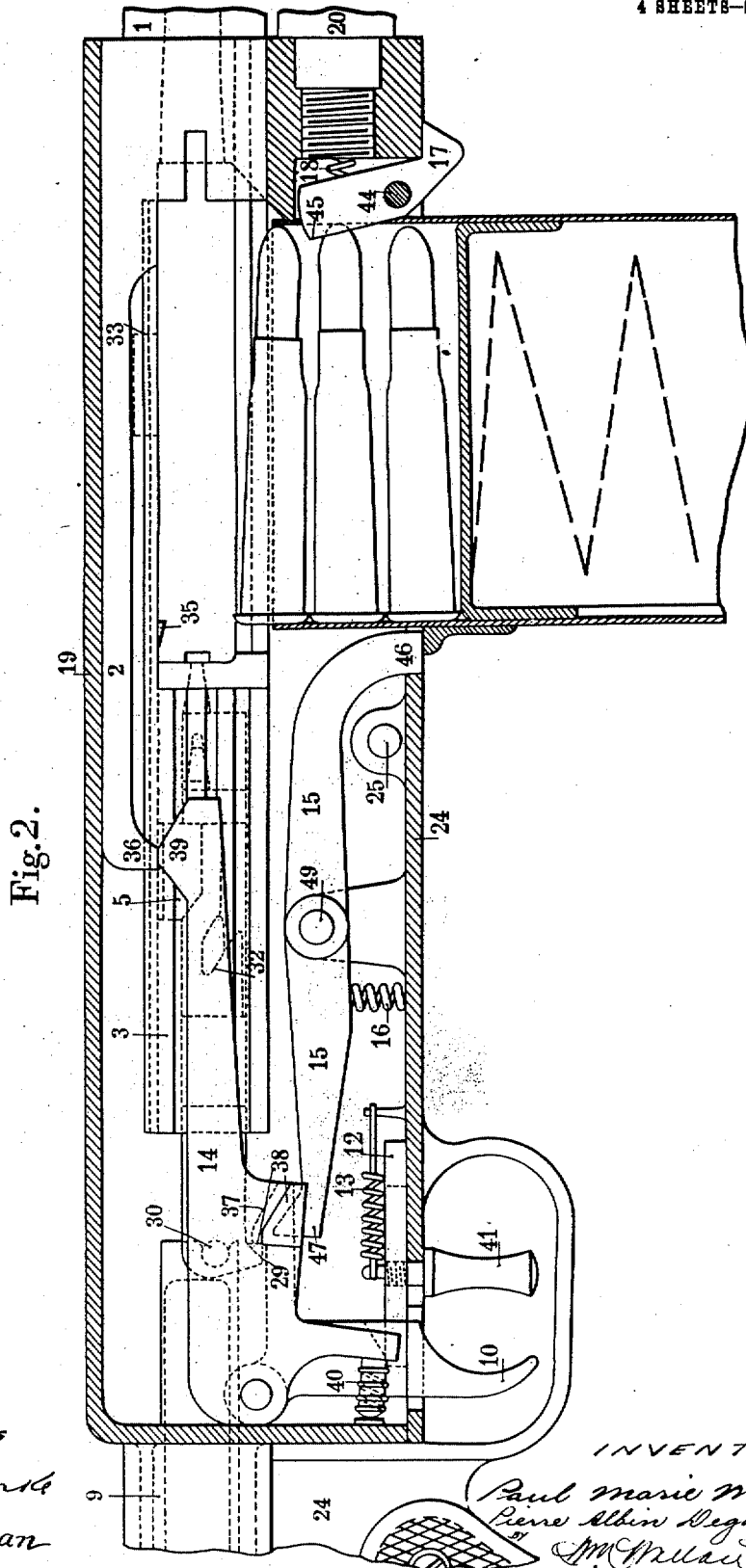
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4 SHEETS--SHEET 2.



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4 SHEETS—SHEET 3.

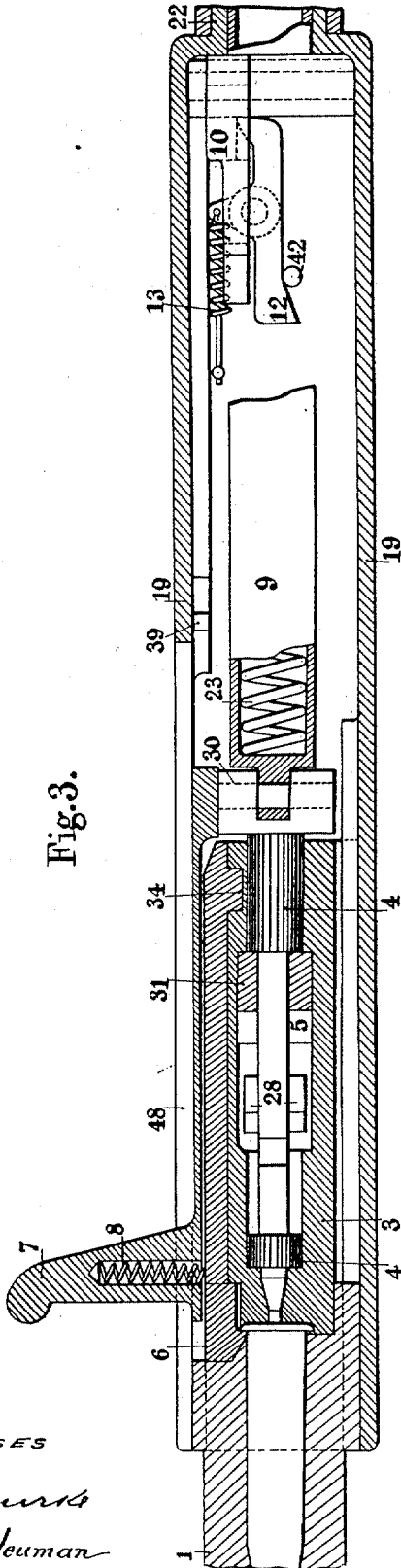


Fig. 3.

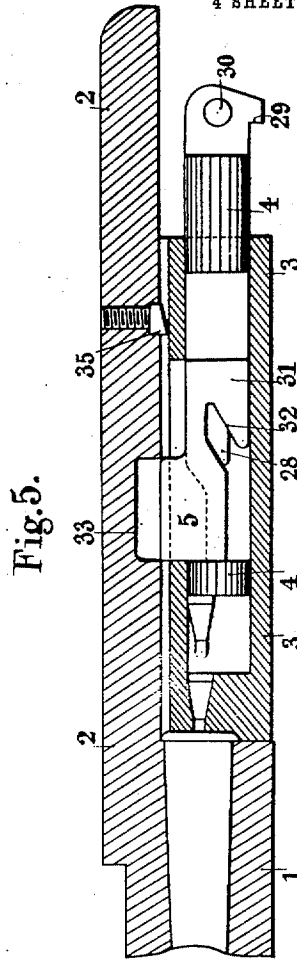


Fig. 5.

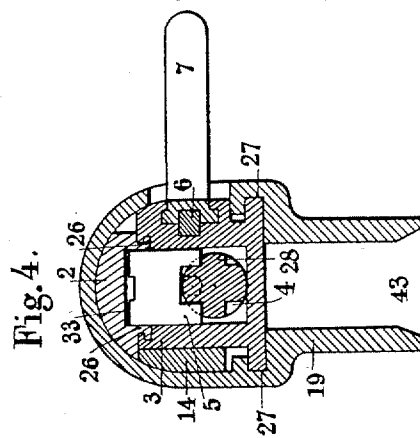


Fig. 4.

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4 SHEETS—SHEET 4.

Fig. 6.

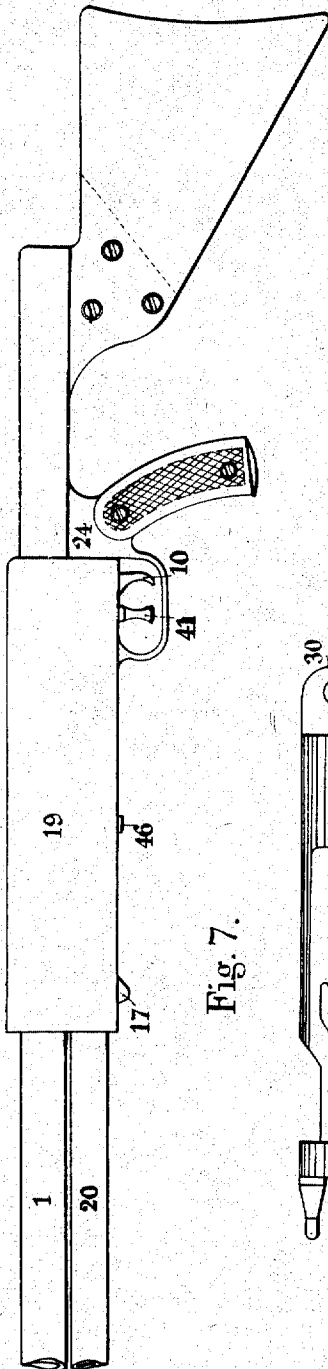


Fig. 7.



Fig. 8.

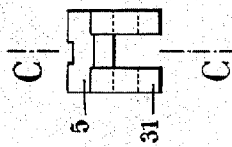


Fig. 9.

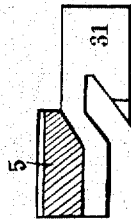


Fig. 10.



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UNITED STATES PATENT OFFICE.

PAUL MARIE MENTEYNE AND PIERRE ALBIN DEGAILLE, OF PARIS, FRANCE.

AUTOMATIC FIREARM.

981,210.

Specification of Letters Patent. Patented Jan. 10, 1911.

Application filed October 20, 1909. Serial No. 523,673.

To all whom it may concern:

Be it known that we, PAUL MARIE MENTEYNE, of 32 Rue Lemer cier, and PIERRE ALBIN DEGAILLE, of 85 Rue de Ménilmontant, both of Paris, Republic of France, engineers, have invented an Automatic Firearm, of which the following is a full, clear, and exact description.

The present invention relates to that class of automatic fire arm which operates by utilization of the recoil.

This invention is applicable to cannon, mitrailleuses, muskets and pistols, and has for its object to obtain a rapid firing arm which is simple, light, readily transportable, readily disassembled, of a relatively low cost price, of strong and simple mechanism, capable of being understood, disassembled and reassembled by all the men of any kind of troops.

In the accompanying drawings, Figure 1 represents a longitudinal section of the left hand side of the arm at the moment when the firing pin strikes the priming of the cartridge. Fig. 2 is a right hand side view showing the closing mechanism in its extreme position of recoil, the barrel having returned to the firing position. Fig. 3 is a horizontal section drawn on the line A—A of Fig. 1. Fig. 4 is a transverse section drawn on the line B—B of Fig. 1. Fig. 5 represents the movable breech in its closing position, the firing pin being still cocked. Fig. 6 shows a left hand exterior side view of the arm. Fig. 7 represents the firing pin seen apart. Fig. 8 shows a back view of the locking block. Fig. 9 represents the same block in its vertical section drawn on the line C—C of Fig. 8. Fig. 10 is a plan view of the same locking block.

In this arm are distinguished: 1st the pieces forming part of the recoiling mass,—2nd the movable pieces attached to the fixed part, 3rd the fixed pieces.

The pieces forming part of the recoiling mass are the barrel 1, which has toward its rear a projection 2, the movable breech 3, the firing pin 4, the locking block 5, the extractor 6, the cocking handle 7, the extractor spring 8, the percussion spring guide 9. The movable pieces attached to the fixed part are: the trigger 10, its spring 11, the trigger catch 12, its spring 13, the automatic trigger lever 14, the stop 15, its spring 16, the magazine catch 17, and its spring 18. The fixed pieces are: a breech frame 19 which

carries at the front a guide tube 20 within which is located a spring 21 which serves to replace the barrel in firing position after the recoil. This framing 19 is terminated at the rear by a tube 22 in the interior of which is located a percussion spring 23. A butt carrying bottom 24 closes the frame 19 at its lower part, and it is fixed thereto by means of a bolt 25 (Figs. 1 and 2) and of a socket which is adjusted on the tube 22.

The movable breech 3 is adjusted on the projection 2 of the barrel and can slide longitudinally on this projection in grooves 26, it also slides by its lower part in grooves 27 of the frame 19. In these grooves 27 of the frame the barrel is also guided by suitable ribs. The firing pin 4 is located in the movable breech 3 and can move longitudinally therein, it has on the right and on the left projections 28; at the rear it is provided with a hook 29 and it is connected to the cocking handle 7 by the axle 30 of the latter. Above the firing pin, and also located within the movable breech 3 is the locking block 5; this block has jaws 31 on its right and left between which the firing pin passes; these jaws are each furnished with an inclined groove 32. When the firing pin moves longitudinally in relation to the movable breech, its projections 28 engaging with it in the grooves 32 of the block 5 cause the latter to move vertically, when the movable breech is in its closing position the block 5 is opposite a hollow housing 33 formed in the projection 2 of the barrel 1 (see Fig. 5). In this position, if the firing pin, which is rearward, is to advance to strike the priming, it is obliged to raise the locking block 5 and cause it to enter the housing 33 of the projection 2, thereby firmly connecting the movable breech 3 and the barrel 1 with each other, thus effecting the closing of the breech; this closing will exist as long as the firing pin is not again moved in relation to the movable breech.

It is to be remarked that in any other position of the movable breech with relation to the barrel than that which corresponds with the closing position, the locking block 5 cannot rise because it always bears against the lower face of the projection 2. Consequently: 1st the firing pin cannot advance to prematurely strike the priming of the cartridge,—2nd the movable breech 3, the firing pin 4 and the locking block 5 become

firmly connected with each other, so that the percussion spring 23 in acting upon the firing pin also acts upon the movable breech to push it forward, so long as it has not arrived at its closing position, because it is only in that position that the locking block 5 can move, enter its housing 33 and permit the firing pin to strike the priming. The movable breech has at the side a cocking handle 7 located in suitable grooves and connected to the firing pin by its axle 30, it can slide in its grooves and follow the to and fro movements of the firing pin, it will be understood that, the breech being supposed to be closed, if the cocking handle is pulled backward, the striking pin is moved with it compressing its spring, the movement of the firing pin has the effect of disengaging the locking block 5 from its housing 33 and of thus permitting the movable breech 3 to move in relation to the barrel 1, if the cocking handle is continued to be pulled, the movable breech is therefore drawn backward to the cocked position.

Between the cocking handle 7 and the movable breech 3 is located a rigid extractor 6 which is fixed to the movable breech by a tenon 34, this tenon has sufficient play in its housing to enable the nose of the extractor to open sufficiently to pass over the rim of the cartridge. The extractor is held closed by a spring 8 which is located in the cocking handle.

The ejector 35 is a projection fixed below the projection 2 of the barrel so as to come against the rim of the cartridge case when the latter is extracted from the chamber. The barrel is guided in front by a slide fixed solidly thereto sliding in the tube 20 and compressing during the recoil the spring 21 which latter by its expansion restores it to firing position.

The projection 2 of the barrel has at its rear end a claw 36 serving to cause the automatic trigger lever 14 to oscillate, this lever 14, preferably jointed on the same axle as the trigger has at its front a nose 39 on which the claw 36 of the projection 2 acts, and toward the rear it is provided with a stop 38 behind which the hook 29 of the firing pin catches; a spring 40 acts on the lever 14 to hold it in its upward position.

When working, at the moment when the firing pin strikes the priming, the locking block 5 insures the connection of the movable breech 3 and of the barrel 1 as has been above stated, when the explosion of the charge takes place, the barrel and the closing pieces of the breech are forced backward. These pieces thus connected together proceed to the extreme position of the recoil; when arrived there, the hook 29 of the firing pin hooks on the one hand on to the nose 37 of the trigger 10 and on the other

hand on the nose 38 of the automatic trigger lever 14. Under the influence of the spring 21 which has been compressed during the recoil, the barrel is returned forward, it draws with it toward the front, the movable breech 3 because the locking block 5 is still engaged in its housing 33, but the firing pin being retained behind, the projections 28 soon become engaged in the grooves 32 of the locking block 5 and compel this block to descend in the movable breech 3 and thus to become disengaged from its housing 33 in the projection 2 of the barrel; from this moment, the barrel alone continues its forward motion, the movable breech being held in its turn by the firing pin which acts on it by means of the locking block 5. The empty cartridge case is held against the movable breech by the extractor 6, and leaves the chamber as the barrel moves forward; it remains held by the extractor 6 until the ejector 35, firmly fixed to the barrel, strikes it at the back which has the effect of causing it to pivot around the nose of the extractor and of ejecting it violently out of the arm through the opening 48 formed for this purpose in the breech frame 19. When the barrel arrives in firing position the claw 36 acts on the nose 39 of the lever 14 and lowers it, compressing the spring 40 (Fig. 2). The lowering of this lever disengages its nose 38 behind which the hook 29 of the firing pin was hooked. At this moment the firing pin is therefore no longer held except by the nose 37 of the trigger. If the trigger is acted upon by the finger the firing pin is unhooked. Under the influence of the percussion spring 23 which has been compressed during the recoil, the firing pin is pushed forward, but as these projections 28 are engaged in the grooves 32 of the locking block 5 and as this block cannot rise because it bears against the under face of the projection 2, the firing pin will not be able to advance without carrying before it the locking block, and the movable breech 3. In this position there exists between the opening in the chamber of the barrel and the head of the movable breech a space sufficient to permit of the introduction of a live cartridge; if therefore, by the means which will be hereinafter explained, a new cartridge is presented before the movable breech, the latter, in advancing, will push it into the barrel; when the cartridge has been completely introduced, the movable breech will have arrived at its closing position, the locking block 5 then being opposite its housing 33 will be able to rise and the firing pin, always pushed by its spring, will compel it to do so thanks to the projections 28 and to the grooves 32, the closing of the breech being thus effected the firing pin will be precipitated forward and strike

the priming. The cycle of movements above described will then recommence in the same order.

From the foregoing it will be seen that at a given moment it is the trigger alone which holds the firing pin backward as soon as the barrel has returned to the firing position, if consequently the action of the trigger is stopped by holding it down in a permanent manner, the firing pin and the movable breech will return to the front each time that the barrel returns to the firing position and has lowered the lever 14; automatic firing will take place as long as new cartridges are presented at each shot before the movable breech. To stop the firing it will suffice to loosen the trigger. But it may be necessary to execute a firing by single shots; for this purpose a pawl 12 is so arranged as to be capable of operating the trigger 10 when with the finger it is pulled backward by acting on its finger piece 41. In this movement, the forward part of the pawl which is provided with an inclined plane encounters a fixed pin 42 which causes it to turn around its finger piece 41, thus disengaging the nose of the pawl from the trigger 10 which immediately returns to its first position and is ready to retain the firing pin backward when the recoil has taken place. To fire a second shot, it is therefore necessary: 1st, to loosen with the finger the finger piece 41 of the pawl 12 which, under the influence of its spring 13 will return to its first position, while its nose will be replaced in engagement with the trigger 10; 2nd, again with the finger pull backward the finger 41 and so on. It will be seen that by this combination it is possible to execute at will either automatic firing or single shot firing according as the finger acts directly on the trigger 10 or else on the finger piece 41. It will be also seen that when single firing is effected it is impossible involuntarily to fire two shots in succession.

For the feed, the cartridges are contained in movable magazines in which they are piled one on another above a pusher platform; a compressed spring below the platform tends to cause them to rise; in order to feed the arm a magazine is fixed in the charging aperture 43 formed in the breech frame 19 below the movable breech. The fixing of the magazine is effected automatically by its simple introduction, by means of the hook 17 oscillating around its axle 44 and the noses 45 of which engage in suitable openings formed in the rear side of the magazine. The hook 17 retains the magazine in position until the last cartridge has been extracted from it; at this moment the pusher platform, continuing to rise under the influence of the magazine spring, presses against the noses 45 of the hook 17, causes them to leave the openings in which

they were engaged and the magazine falls by its own weight. It is only necessary to replace the exhausted magazine by a fully charged one to continue the firing.

To avoid having to re-cock the mechanism after each magazine has been emptied, a stop 15 oscillating around an axle 49 is arranged in such manner that, when the magazine is in its place, the end 46 of this stop is raised by a projection conveniently placed on the rear side of the magazine (see Fig. 2). In this position, the nose behind the stop is arranged so as not to encounter the hook 29 of the firing pin, but when the magazine falls, the projection of this magazine no longer acting on the end 46 of the stop, this latter oscillates around its axle under the influence of the spring 16, the nose 47 rises and no longer permits the firing pin, which has gone to its recoil position, to return toward the front, the breech will therefore remain open and the arm will be ready for charging. The fact of introducing a new magazine full of cartridges will have the effect of causing the lever 15 to oscillate in the reverse direction and to annul its action on the firing pin. By this combination the time necessary for replacing magazines is reduced to the strict minimum because the unhooking of the empty magazine is automatically effected and it is not necessary to re-cock the mechanism.

It will be remarked that the combination of the various parts of this arm constitutes by itself the most absolute safety against premature or untimely firing because: 1st the firing pin cannot strike the priming before the breech is completely closed; 2nd that there cannot remain any cartridges charged in the barrel when the trigger is no longer operated as in this case the breech remains open and in its recoil position; 3rd that every cartridge introduced into the chamber being undoubtedly fired directly after its introduction, one of them cannot be forgotten which might cause untimely explosion after a firing which would have sufficiently heated the barrel.

The forms, details, accessories, materials and dimensions of this automatic fire arm, it will be well understood, may be varied without in any way changing the principle of the invention.

Claims.

1. An automatic fire arm comprising a barrel, movable rearwardly by the recoil, a spring for returning the barrel to normal position, a breech block having sliding movement on the barrel, a firing pin having sliding movement in the breech block, a spring in engagement with the firing pin for returning the same to normal position, a locking block for locking the breech block to the barrel, and means for operating the locking block by the movement of the firing pin.

2. An automatic firearm comprising a barrel, movable rearwardly by the recoil, a spring for returning the barrel to normal position, a breech block having sliding movement on the barrel, a firing pin having sliding movement in the breech block, a locking block having vertical movement in the breech block, and adapted to engage with the portion of the barrel to lock the breech block to the same, a projection on the firing pin engaging with the locking block to move the same out of engagement with the barrel, a spring for returning the breech block and firing pin to firing position, and a trigger for operating said parts.

3. An automatic firearm comprising a barrel, movable rearwardly by the recoil, a spring for returning the barrel to normal position, said barrel having an extension having a recess therein, a breech block having sliding movement on said extension, a firing pin having sliding movement in said breech block, a locking block on the breech block adapted to engage with said recess to lock the breech block to the barrel, a projection on the firing pin engaging with the locking block to move the same out of the recess, a spring for returning the firing pin and breech block into firing position, and means for preventing the movement on the breech block and firing pin until the barrel has returned to its normal position.

4. A firearm comprising a trigger, means for firing continuously when said trigger is held down, and means operatively associated with said trigger adapted to move it down into its firing position and then release the same to allow it to return to its raised position whereby only one shot at a time may be fired.

5. A firearm comprising a trigger, means for firing continuously when said trigger is held down, and a second trigger having means thereon engaging with the first trigger whereby only one shot at a time may be fired.

6. A firearm comprising a trigger, means tending to retain it in its raised position, means for firing continuously when said trigger is held down, a second trigger operatively associated with said first trigger and adapted on being actuated to engage and move said first trigger downward into firing position and means for moving said second trigger out of engagement with said first trigger to allow said first trigger to return to its raised position, whereby only one shot at a time may be fired.

7. A firearm comprising a trigger, means tending to retain it in its raised position, means for firing continuously when said trigger is held down, a second trigger operatively associated with said first trigger and adapted on being actuated to engage and move said first trigger downward into firing position and means for automatically moving said second trigger out of engagement with said first trigger to allow said first trigger to return to its raised position, whereby only one shot at a time may be fired.

8. A firearm comprising a trigger, means tending to maintain it in its raised position, means for firing continuously when said trigger is held down, a second trigger operatively associated with said first trigger and adapted upon being actuated to engage and move said first trigger downwardly into firing position, and means for moving said second trigger out of engagement with said first trigger after said first trigger has assumed its firing position to allow said first trigger to return to its raised position whereby only one shot at a time may be fired.

The foregoing specification of our automatic fire arm signed by us this eighth day of October 1909.

PAUL MARIE MENTEYNE.
PIERRE ALBIN DEGAILLE.

Witnesses:

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R. EHRIOT.