May 12, 1931. L. THIRY 1,805,383

AUTOMATIC PISTOL

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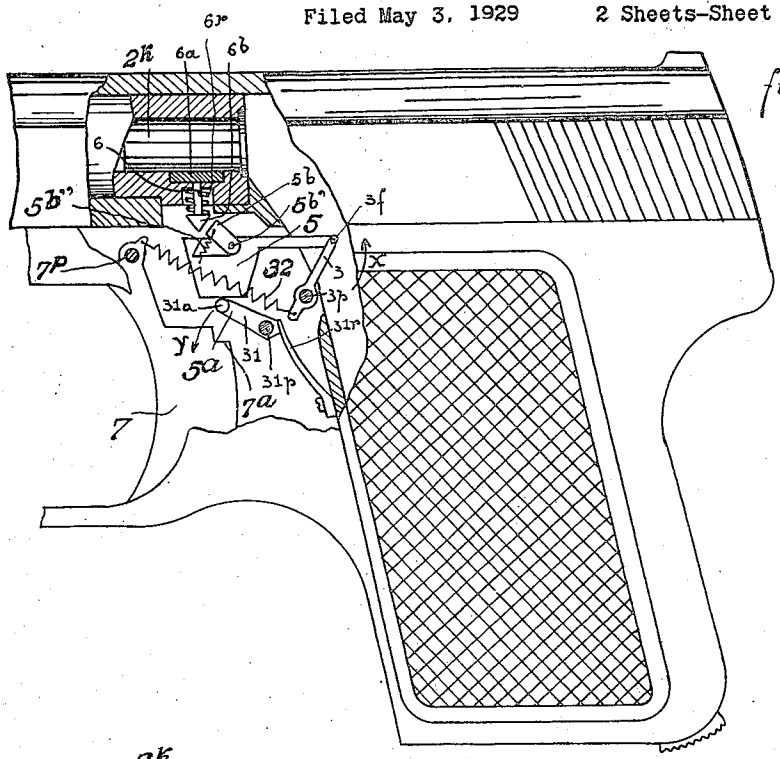

fig. 1

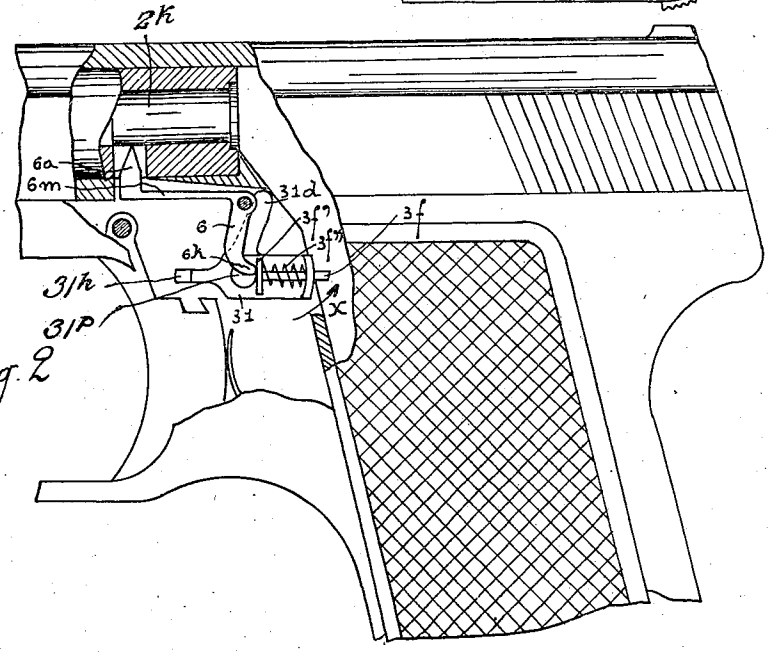

fig. 2

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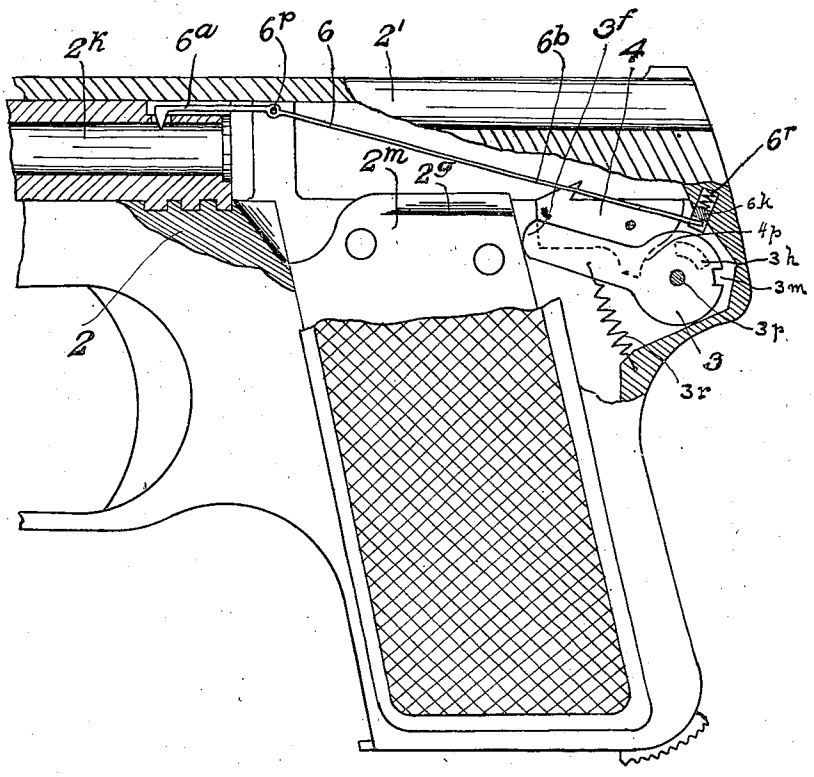
fig. 3



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Patented May 12, 1931 1,805,383

UNITED STATES PATENT OFFICE

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AUTOMATIC PISTOL

Application filed May 3, 1929, Serial No. 360,130, and in Germany May 7, 1928.

When use is made of an automatic firearm it frequently happens that the magazine is withdrawn while a cartridge is still engaged in the barrel. If the magazine is then replaced even while it is still empty, the operator runs the risk of being unaware of or having forgotten the existence of a cartridge which may be in the barrel and ready to be fired.

The object of the invention is to remove this disadvantage.

For this purpose, according to the invention, if a cartridge is in the barrel at the moment when the magazine is inserted, the relative movement produced between the magazine and its lodgment is employed for putting the weapon in a position of safety.

It goes without saying that if the firearm is already in a condition of safety the insertion of the magazine at this moment will simply leave the firearm in this condition. The existence of this previous condition of safety may result, in a mechanism putting the firearm in a condition of safety, by the withdrawal or absence of the magazine or by any other mechanism.

The invention also provides for the fact that when the magazine has been withdrawn from its lodgment while a cartridge is in the barrel, a member projecting into the magazine lodgment prevents the latter from being put back into place as long as the said cartridge remains in the barrel.

The invention can obviously be carried into effect in a great number of ways.

The accompanying drawings illustrate simply by way of example and in a nonlimiting manner some forms of construction.

In these drawings:

Figure 1 is a diagrammatic view of an arrangement by means of which the firearm is put into a condition of safety by the insertion of the magazine if a cartridge is in the barrel.

Figure 2 shows another arrangement providing the same effect.

Figure 3 shows an arrangement in which it is impossible to replace the magazine as long as a cartridge is in the barrel.

In the case shown in Figure 1, the various parts occupy the position shown in the drawing when the magazine is withdrawn.

When the magazine is again inserted the lever 3 pivoted at $3p$ upon the frame of the firearm and the end $3f$ of which projects into the lodgment of the magazine, will be displaced in the direction of the arrow X. This displacement will produce the displacement of the member 5. This member rests upon the part $31a$ of the chamber 31 capable of putting the firearm in a condition of safety by the fact that it places itself in the notch $7a$ of the trigger 7 pivoted at $7p$. The safety member 31 is held in one or the other of its positions by a spring $31r$ acting upon two flats provided upon the said member 31 which is pivoted at $31p$. The member 5 is provided with a projection $5b$ which cooperates with the head $6b$ of a member 6 one part $6a$ of which is adapted to penetrate into the chamber of the barrel when there is no cartridge in the latter. This member 6 is constantly urged by the spring $6r$ in a direction such that the member $6a$ does not occupy the chamber of the barrel. The relative tensions of the springs $6r$ and $31r$ are such that, as a result of the movement produced by the displacement of the member 5, the spring $6r$ will be adapted to yield before the spring $31r$ permits the displacement of the safety member 31. Consequently, if there is no cartridge in the barrel, the projection $5b$ of the member 5 will move the head $6b$ of the member 6 by the cooperation of the inclines with which the contacting parts are provided and the projection $5b$ will place itself behind the head $6b$. During this movement, the member 5 will have simply slide along the part $31a$ of the safety member 31 without moving the latter.

On the contrary, if a cartridge is situated in the chamber of the barrel $2k$ the member 6 will not be able to yield to the action it undergoes as a result of the cooperation of the inclines on the projection $5b$ and on its head $6b$ so that the member 5, in order to answer to the pressure it undergoes on the part of the lever 3 moves in the direction of the arrow X when the magazine is inserted, will have to slide along the incline on the head $6b$ of the member 6 while moving the lever 31 in the direc-

tion of the arrow Y which lever will thus put the firearm in a condition of safety.

The safety device can be made inoperative for example by a direct action exerted by the operator upon a part of the member 31 projecting outside the firearm. According to a modified construction this result may also be obtained by means of one of the parts which move when the firearm is cocked. The lever 3 is constantly urged to engage in the lodgment for the magazine by means of a spring $3r$ the tension of which is sufficient to move the member 6 against the action of its return spring $6r$.

As shown in Fig. 1, the projection $5b$ may if desired be formed by a finger pivoted at $5b'$ upon the member 5 and adapted to be disengaged under the action of a spring $5b''$.

By means of this arrangement, when the lever 3 moves in an opposite direction to that of the arrow X, as occurs when the magazine is removed, the member 5 will be able to move without producing the displacement of the safety member 31 if the tension of the spring $5b''$ is such that this spring becomes compressed before the spring $31r$ permits the displacement of the safety member 31.

In the case shown in Figure 2, the safety member 31 pivoted at $31p$ is adapted to act by means of its face $31h$ upon the trigger so as to put the firearm in a condition of safety. In this member moves a slide block $3f$ which projects into the magazine lodgment against the opposing action of its return spring $3f''$ when the end $6k$ of the lever 6, the end $6a$ of which is adapted to engage in the chamber of the barrel, acts upon the part $3f'$ of this member $3f$. This action is produced as soon as a cartridge is engaged in the chamber of the barrel $2k$.

Nevertheless, if at this moment the magazine is in its lodgment, the member $3f$ abuts against this magazine and it cannot yield to the pressure exerted by the member 6. In order to permit the part $6a$ of this member to be withdrawn however, one of the arms such for example as the arm $6n$ which this member 6 comprises, is formed of an elastic material. The tension given to this arm is such that if the magazine is not in its lodgment the spring $3f''$ will be compressed before this arm yields.

When the magazine is placed in position if a cartridge is in the barrel, the end $3f$ which projects into the magazine lodgment is carried along in the direction of the arrow X thus placing the member 31 in the safety position. The safety device is disengaged by means of one of the members which move when the pistol shown in Figure 2 is cocked. For this purpose the movable breech is provided with a projection not shown in the drawings, adapted to abut against the arm $31d$ carried by the member 31 in such a way as to move this arm in this member in the opposite direction to that of the arrow X. The projection provided upon the movable breech will however be situated at such a distance that before it comes into contact with the above mentioned arm 31, the cartridge which was situated in the chamber of the barrel will have been extracted by the normal movement of the usual extractor so that the member $3f$ will have been able to withdraw completely in the interior of the member 31 so as to permit the rotation of the latter in the opposite direction to that of the arrow X in spite of the presence of the magazine in its lodgment.

In the case shown in Fig. 3, the sear 4 is put in a condition of safety by a stop $3h$ which becomes placed beneath an incline $4p$ on the sear. This stop $3h$ is made rigid with a member 3 pivoting at $3p$ upon the frame and moved when the magazine $2m$ is withdrawn into its operative locking position by a spring $3r$.

This member 3 is controlled in its locking position as a function of the presence of a cartridge in the barrel $2k$ of the firearm. This control is obtained by means of a lever 6 pivoted at $6p$ upon the frame and one of the arms $6a$ of which penetrates into the barrel while the other arm $6b$ penetrates into a suitable notch formed in a slide block $6k$ urged out of its lodgment by a spring $6r$ bearing upon the end of the above mentioned lodgment formed in the frame. The locking of the safety device by the said lever is obtained by forming in the member 3 a notch $3m$ in which engages the above mentioned slide block $6k$. When the member 3 is moved into the position for which it puts the sear 4 in a condition of safety, this member 3 will be locked as long as there is a cartridge in the barrel $2k$.

In order to withdraw this cartridge it will be sufficient to act in the usual manner upon the slide $2g$ of the firearm. When this operation has been effected the arm $6a$ will penetrate into the chamber of the barrel and the arm $6f$ will push the slide block 6 k to the end of its lodgment and this slide block will thus release the member 3 which may be brought into its initial inoperative position by one of the means described above.

It is to be noted that the magazine $2m$ cannot be put back in place as long as a cartridge remains in the barrel. In fact, in order to take up its place again the magazine must push before it the end $3f$ of the member 3 which is locked by the slide block $6k$ as long as a cartridge is in the barrel.

The invention also provides for the combination of a safety catch controlling device as specified above to be combined with a control device constructed in such a way as to cause the firearm to be put in a condition of safety when the magazine is removed and for this to be done in such a way that the subsequent insertion of the magazine leaves the

firearm in a condition of safety if it is already in such a condition.

By locking the finger forming the projection 5*b* in the form of construction shown in Figure 1, in such a way as to prevent it swinging about the pivot 5*b'*, a firearm will be obtained which will be put in a condition of safety when the magazine is removed if a cartridge is at this moment in the barrel. It goes without saying that when the magazine is again inserted it will not affect this condition of safety.

What I claim is:

1. Automatic weapon comprising an element having a portion capable of projecting into the seat of the magazine so as to be displaced by the magazine upon its introduction into the said seat, a safety device for the weapon controlled by this element, an element one part of which is withdrawn beyond the chamber of the gun when the latter contains a cartridge, and means providing a connection between this element and the said element, so that the replacing of the weapon in condition for firing by the reintroduction of the magazine into its seat would be impossible as long as a cartridge still remains in the chamber of the gun.

2. Automatic weapon comprising an element having a portion capable of projecting into the seat of the magazine so as to be displaced by the magazine upon its introduction into the said seat, a safety arrangement for the weapon controlled by this element, an element, whereof a portion is extended beyond the chamber of the gun when the latter contains a cartridge, and a member which positively places the safety arrangement in its safety position when this member engages upon said element, which by reason of this engagement is urged to penetrate by one of these portions into the chamber of the gun, this penetration not having taken place and the placing in safety position being effectively produced if the magazine is returned into position, and then that a cartridge is again placed into the chamber of the gun.

3. Automatic weapon comprising an element having a portion capable of projecting into the seat of the magazine so as to be displaced by the magazine upon its introduction into the said seat, a safety device for the weapon controlled by this element, an element, a portion of which is extended beyond the chamber of the gun when the latter does not contain a cartridge and a member which positively places the safety arrangement into the safety position when it is displaced by the returning of the magazine to position, the above named portion capable of projecting into the seat of the magazine being urged by a return spring to not project into the seat of the magazine, this projection not taking place except when this portion is pushed by another portion of the said element, a portion of which is fed beyond the chamber of the gun when the latter contains a cartridge.

4. Automatic weapon according to claim 3 in which the safety lever has an element capable of being influenced at the moment of cocking by an element of the cocking mechanism, so as to provide the freeing of the detent previously obstructed.

5. Automatic weapon comprising a safety arrangement placed in its safety position by the withdrawal of the magazine by means of the penetration of an element into the seat of the magazine and means for obstructing this element in its safety position by a portion actuated by an element, a portion of which is extended beyond the chamber of the gun when the latter contains a cartridge, so that returning the magazine to place is prevented while a cartridge remains in the chamber of the gun.

In testimony whereof, I have affixed my signature.

LEON THIRY.