Feb. 19, 1924. **1,484,163**

G. VINÇON

AUTOMATIC FIREARM

Filed April 23, 1923 2 Sheets-Sheet 1

Fig. 1

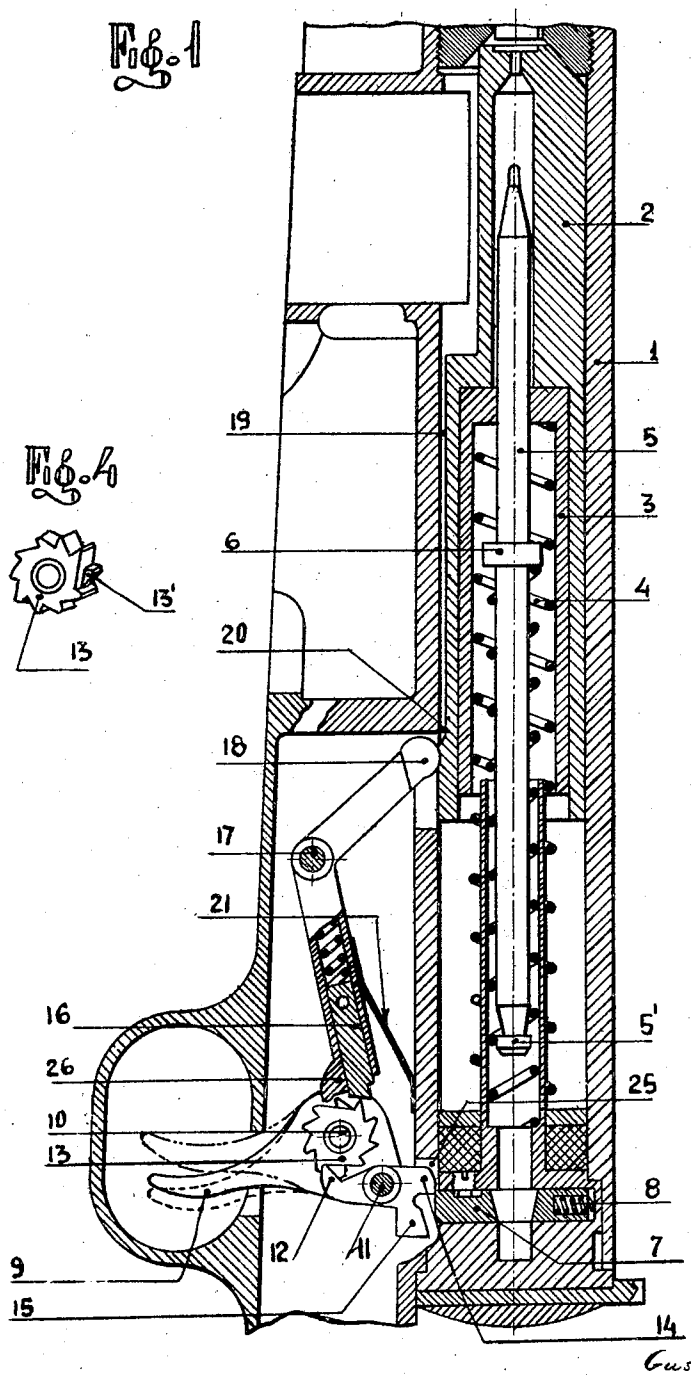


Fig. 4

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Fig. 2

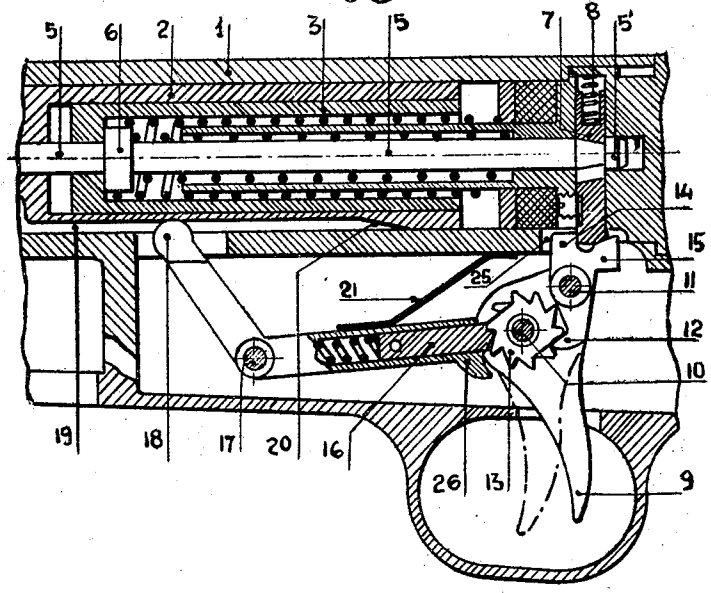
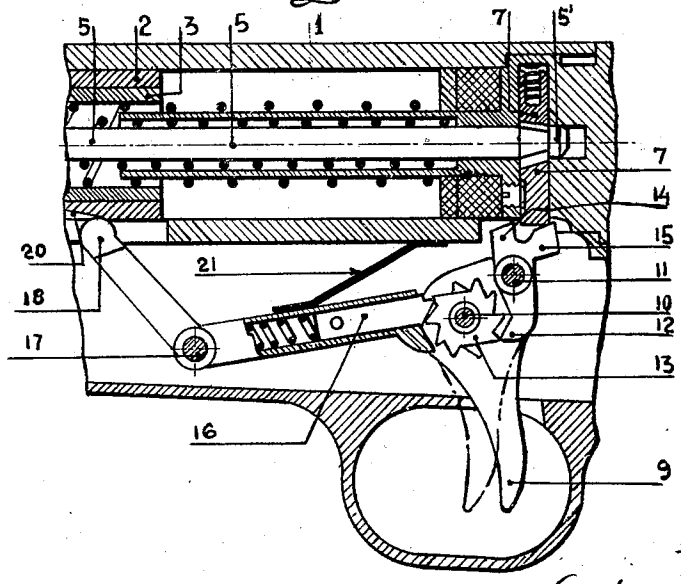


Fig. 3



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UNITED STATES PATENT OFFICE.

GUSTAVO VINÇON, TURIN, ITALY.

AUTOMATIC FIREARM.

Application filed April 23, 1923. Serial No. 634,070.

To all whom it may concern:

Be it known that I, GUSTAVO VINÇON, a subject of the King of Italy, residing at Turin, in the Kingdom of Italy, have invented certain new and useful Improvements in Automatic Firearms, of which the following is a specification.

The present invention has for its object a mechanism which permits of the discharge of automatic firearms and in particular automatic rifles by limited bursts. With this mechanism, by exerting a pressure with the finger upon the trigger, a burst of a fixed and constant number of shots is fired. The weapon may obviously comprise means for throwing the mechanism for firing in bursts out of operation and to permit single shots to be fired.

The mechanism which forms the subject matter of this invention is composed substantially of a toothed wheel the number of teeth of which corresponds to the number of shots which it is desired to fire per burst or to a multiple of this number and which is mounted loose on the pivot on which the trigger oscillates, this toothed wheel being driven tooth by tooth by a lever operated by the breech block at the end of the closing movement of this latter and being operated at each rotation by a tooth, and a trigger lever which releases the striker and allows it to make its operative movement. The last tooth of the group of teeth in the wheel corresponding to a burst is narrower than the other teeth of this group and cannot consequently operate the lever which releases the striker although it is operated by the lever actuated by the breech block so that at the end of the burst of shots, the trigger lever does not release the striker which thus remains held.

In order to recommence the firing, it is necessary to first let go the trigger and then press again thereon; a finger operated by the rotation of the trigger then produces the release of the striker and thus causes the first shot of the new burst to be fired, the remaining shots of which will be produced automatically by the burst firing mechanism.

In order to render the explanations about to be given clearer, I have shown by way of example, in the accompanying drawings, a form of construction of the mechanism forming the subject matter of my invention as applied to a carbine.

Figure 1 is a partial axial section of the weapon, the trigger shown in full lines being completely pulled for the firing of the first shot. The dot and dash lines show the trigger in its normal position of rest and the dotted lines show it in its completely pulled position.

Figures 2 and 3 are two similar sections to that shown in Figure 1, representing the mechanism during the firing of bursts, Figure 2 illustrating the arrangement of parts at the moment when the striker is held and in which the breech block, having arrived at the end of its recoil movement, recommences its forward movement, and Figure 3 showing the disposition of the parts at the moment when the breech block is about to close and the striker to be released.

Figure 4 is a detail view in perspective of the toothed wheel mounted loose on the trigger pin.

1 is the fixed breech of the weapon and 2 is the breech block. The striker is composed of two parts 3 and 5; the first one, 3, provided with a lug adapted to engage with the helicoidal notch in the breech block and the spring 4, cannot advance relatively to the breech block except at the end of the closing movement. The part 5 (which constitutes the striker proper and is provided with the firing pin) is provided with a spring and a rear head 5′ engaging with an automatic stop 7, the latter having a spring 8 and serving to hold back the striker until the trigger lever releases it by moving the stop member 7. The striker proper 5 is also provided with a collar 6 adapted to strike against the part 3, so that the percussion head or firing pin and also the part 3 are not moved forwards relatively to the breech block, that is to say as long as this latter is not completely closed.

9 is the trigger of the weapon rotating on the pin 10 and on which is pivoted at 11 the trigger lever which is provided with a lower tooth 12 engaging with the teeth of a toothed wheel 13 mounted loose on the pin 10. The toothed wheel (see Figure 4) carries a number of teeth equal to the number of shots which it is desired to fire per burst,

or which is a multiple of this number of shots. At the end of each group of teeth corresponding to a burst the toothed wheel carries a narrower tooth 13′, the thickness of which is such that it cannot engage with the tooth 12 on the trigger lever.

The trigger lever is provided at its upper part with a tooth 14 which serves to release the automatic stop 7 of the striker, when the trigger is completely drawn from its position of rest (represented by dot-and-dash lines in Figure 1) to the position represented by dotted lines. The trigger lever is also provided with a tooth 15 which, while the trigger is held by the pressure of the finger in its rear firing position, releases the automatic stop of the striker thus liberating this latter each time the tooth 12 on the trigger lever is raised by the passage of a tooth 13 of the toothed wheel.

16 denotes an escapement tooth carried by one of the arms of a bell-crank lever pivoted at 17. The other arm 18 of this lever engages at its end with the breech block 2. This end slides in a groove 19 formed in the breech block and terminating in an inclined face 20 which produces (during the closing of the breech block) the rotation of the bell-crank lever and consequently the movement of one tooth of the toothed wheel 13 driven by the escapement tooth 16 (see Figure 3).

A spring 21 serves to maintain the arm 18 of the bell-crank lever in contact with the breech block.

The working of the weapon is as follows:—

The breech block is pulled back by hand and then let go which automatically brings a cartridge by the breech block into the cartridge chamber of the barrel, the striker 5 remaining cocked.

Pressure is then applied to the trigger 9 which brings the tooth 14 of the trigger lever under the automatic stop 7 (see Figure 1) and lifts this stop until the striker is released. At the end of the movement of the trigger the tooth 14 has arrived at 25 and no longer acts on the automatic stop 7. This latter can therefore automatically arrest the striker at the moment of the recoil produced by the first shot. By keeping the trigger pulled right back, automatic firing in bursts is obtained, because the breech block at the end of its closing movement will rock, by means of its inclined face 20, the bell-crank lever, the escapement tooth 16 of which will cause the advance of one tooth of the wheel 13, thus producing the rotation of the trigger lever, the tooth 15 of which will lift the automatic stop 7 (see Figure 3) by releasing the striker while leaving the automatic stop 7 free to again come into action to hold back the striker 5 when said striker arrives at the end of its travel. These movements continue automatically as long as pressure is applied to the trigger until there comes opposite the tooth 12 of the trigger lever one of the narrower teeth 13′ of the wheel 13 which cannot operate the trigger lever. The trigger is then held back by the part 7 and is not liberated when the breech block accomplishes its closing movement. To fire another burst of shots it is necessary to let go the trigger and then pull it back so as to fire the first shot by the aid of the tooth 14 of the trigger lever and thus permit the bell-crank lever pivoted at 17 to move the wheel 13 one tooth and bring into engagement with the tooth 12 of the trigger lever a tooth on the wheel 13 of full width so that the trigger lever can act to fire the remaining shots of the burst.

In order to render impossible the passage of more than one tooth of the wheel 13 at each oscillation of the bell-crank lever this latter is provided below the tooth of the escapement with a tail 26 which acts as a stop for the toothed wheel and comes into contact with the tooth which follows that which is moved each time by the part 16.

To permit the weapon to fire only one shot at a time, it suffices to provide a lever or other device of a suitable kind adapted to throw out of operation the bell-crank lever pivoted at 17 either by moving its escapement tooth aside or by lowering the end of the bell-crank lever.

In the example represented in the annexed drawings the same trigger lever carries the teeth 14 and 15 serving respectively to fire the first shot and to fire the remaining shots of the burst, but it is obvious that another lever could also be employed independent of the trigger lever carrying the tooth 15 and which would be actuated by the rocking movement of the trigger.

I claim as my invention:—

1. In an automatic fire arm, the combination, with a sliding breech block, a striker and a trigger: of mechanism for effecting burst firing, comprising a wheel rotatably mounted on the pivot of the trigger and having a group of teeth equal in number to the number of shots in the burst and also having a special tooth at the end of the group, means operated by the closing movement of the breech block for turning said wheel tooth by tooth, a trigger lever pivotally mounted on the trigger and adapted to be rocked by each tooth of the wheel except the special tooth but left stationary as that tooth passes by, and an automatic stop engageable with the striker to hold it in retracted position but released by each rocking movement of the trigger lever; substantially as described.

2. An automatic fire arm, according to claim 1, in which the special tooth is rela-

tively narrow as compared with the other teeth so as to pass by the trigger lever without operating it; substantially as described.

3. In an automatic fire arm, the combination, with a sliding breech block, a striker and a trigger: of mechanism for effecting burst firing, comprising a wheel rotatably mounted on the pivot of the trigger and having a group of teeth equal in number to the number of shots in the burst and also having a special tooth at the end of the group, means operated by the closing movement of the breech block for turning said wheel tooth by tooth, a trigger lever pivotally mounted on the trigger and adapted to be rocked by each tooth of the wheel except the special tooth but left stationary as that tooth passes by, an automatic stop engageable with the striker to hold it in retracted position but released by each rocking movement of the trigger lever, and means operated by the movement of the trigger for releasing said stop to fire the first shot; substantially as described.

4. In an automatic fire arm, the combination, with a sliding breech block, a striker and a trigger: of mechanism for effecting burst firing, comprising a wheel rotatably mounted on the pivot of the trigger and having a group of teeth equal in number to the number of shots in the burst, means operated by the closing movement of the breech block for turning said wheel tooth by tooth, a trigger lever pivotally mounted on the trigger and rocked by each tooth of the group, said wheel having at the end of the group a special tooth which is relatively narrow as compared with the other teeth so as to pass by the trigger lever without rocking it, an automatic stop engageable with the striker to hold it in retracted position but released by each rocking movement of the trigger lever, and means operated by the movement of the trigger for releasing said stop to fire the first shot; substantially as described.

5. In an automatic fire arm, the combination, with a sliding breech block, a striker and a trigger: of mechanism for effecting burst firing, comprising a wheel rotatably mounted on the pivot of the trigger and having a group of teeth equal in number to the number of shots in the burst, a bell crank adapted to be rocked by the closing movement of the breech block and provided with an escapement tooth for engagement with the teeth of said group to impart a tooth-by-tooth rotary movement to said wheel, a trigger lever pivotally mounted on the trigger and rocked by each tooth of the group, and an automatic stop engageable with the striker to hold it in retracted position but released by each rocking movement of the trigger lever; substantially as described.

6. An automatic fire arm, according to claim 5, in which the breech block is provided with a longitudinal groove to receive the adjacent end of the bell crank, said groove terminating at its inner end in an inclined face to engage said bell crank end during the closing movement of the breech block and thus effect its rocking movement; substantially as described.

7. In an automatic fire arm, the combination, with a sliding breech block, a striker and a trigger: of mechanism for effecting burst firing, comprising a wheel rotatably mounted on the pivot of the trigger and having a group of teeth equal in number to the number of shots in the burst and also having a special tooth at the end of the group, a bell crank adapted to be rocked by the closing movement of the breech block and provided with an escapement for engagement with all of the teeth of the wheel to impart to the latter a tooth-by-tooth rotary movement, a trigger lever pivotally mounted on the trigger and adapted to be engaged and rocked by each tooth of the group, the special tooth being relatively narrow as compared with said group teeth so as to pass by the trigger lever without engaging it, and an automatic stop engageable with the striker to hold it in retracted position but released by each rocking movement of the trigger lever; substantially as described.

8. In an automatic fire arm, the combination, with a sliding breech block, a striker and a trigger: of mechanism for effecting burst firing, comprising a wheel rotatably mounted on the pivot of the trigger and having a group of teeth equal in number to the number of shots in the burst and also having a special tooth at the end of the group, means operated by the closing movement of the breech block for turning said wheel tooth by tooth, a trigger lever pivotally mounted on the trigger and adapted to be rocked by each tooth of the wheel except the special tooth but left stationary as that tooth passes by, an automatic stop engageable with the striker to hold it in retracted position but released by each rocking movement of the trigger lever, and a finger on the trigger lever operated by the movement of the trigger for releasing said stop to fire the first shot; substantially as described.

In testimony whereof I affix my signature.

GUSTAVO VINÇON.