The present invention relates to improvements in firearms and relates more particularly to improvements in receiver and trigger-plate constructions for firearms.

In firearms of the type wherein parts such as the receiver-unit and the trigger-plate unit are coupled together with capacity for rapid demounting for purposes of cleaning and repair, it sometimes happens that the user of the firearm will forget or neglect to see that the firing-member is in its uncocked position prior to attempting such disassembly. Such a situation is dangerous, insomuch as the firing-member is apt to be unintentionally released from its cocked position during the operation of disassembly with the result that the firearm is liable to be accidentally discharged. More often, however, the accidental discharge of the firearm will not occur, but the hammer or other firing-member is apt to inflict painful injuries upon the user if accidentally released from its cocked position either during or following the separation of the two said units from each other.

One of the objects of the present invention is to provide a superior firearm construction in which the receiver-unit and the trigger-plate unit thereof are readily separable one from the other for purposes of cleaning and repair in which construction, the separation of such units is permitted only when the firing-mechanism is in such condition as to minimize the risk of injury to the user by being struck by a hammer or the like or at the risk of the accidental and unintentional discharge of the firearm with its consequent danger.

Another object of the present invention is to provide a superior firearm construction embodying a receiver-unit and a trigger-plate unit coupled together with capacity for rapid separation, and a firing-mechanism which automatically guards against the separation of the two said units when the firing-mechanism is cocked and therefore in a potentially dangerous condition.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art and which are not claimed in any separate application.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a broken view partly in side elevation and mainly in vertical central-longitudinal section of a firearm receiver-unit and a trigger-plate unit shown in normal assembled relationship, together with a portion of a firearm-barrel;

Fig. 2 is a similar view but showing the trigger-plate unit in side elevation moved rearwardly relative to the receiver-unit until checked by the guard-arm of the hammer;

Fig. 3 is a view generally corresponding to Figs. 1 and 2, but showing the hammer in its uncocked position to thereby permit the trigger-plate unit to be moved rearwardly relative to the receiver-unit to a degree sufficient to permit the demounting of the said trigger-plate unit;

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 1;

Fig. 6 is a top or plan view of the trigger-plate unit, detached;

Fig. 7 is a view thereof in side elevation;

Fig. 8 is a transverse sectional view taken on the line 8—8 of Fig. 7;

Fig. 9 is a view of the receiver-unit mainly in side elevation and partly in vertical central-longitudinal section, together with a portion of the barrel;

Fig. 10 is an underside view of the structure of Fig. 9 and Fig. 11 is a transverse sectional view taken on the line 11—11 of Fig. 10.

The particular receiver and trigger-plate construction for firearms herein chosen for purposes of illustrating the present invention includes in the main a receiver-unit 15, a trigger-plate unit 16 and a barrel 17. The rear end of the barrel 17 is rigidly attached in any approved manner to the forward end of the receiver-unit 15, while the trigger-plate unit 16 is demountably attached to the underside of the receiver-unit 15 in a manner as will be hereinafter described.

The receiver-unit 15 is formed with a longitudinal bolt-receiving chamber 16 in which is adapted to reciprocate a breech-bolt of any suitable type. The said receiver-unit 15 is formed with an upwardly-leading ejection-opening 19 through which cartridge-cases may be ejected in any suitable manner. Also as is particularly well shown in Figs. 9 and 10, the under-portion of the receiver-unit 15 is formed adjacent its forward end with a vertical magazine-receiving passage 20 and adjacent its rear end with a vertical clearance-passage 21, the rear wall of which latter constitutes a forwardly-facing locking-abutment 22 for purposes as will hereinafter appear.

The magazine-receiving passage 20 and the
clearance-passage 21 of the receiver-unit 15 are partially divided from each other by an integral web 23 extending transversely of the said receiver-unit about midway the length thereof and integrally uniting the respective opposite side-walls of the said unit. The forward lower portion of the receiver-unit 15 is formed with a central-longitudinal downwardly-opening groove 24 communicating at its rear end with the magazine-receiving passage 20 and intersecting the extreme forward end of the receiver-unit 15, as is especially well shown in Figs. 9 and 10.

Placed slightly below the web 23 of the receiver-unit 15, the said unit is formed with two longitudinal inwardly-projecting coupling-ribs 25—25, one of which projects inwardly from each of the respective opposite side-walls of the said receiver-unit, as is especially well shown in Figs. 4 and 11.

Resting respectively upon the coupling-ribs 25—25 of the receiver-unit 15 is one of two corresponding longitudinal coupling-ribs 26—26 respectively laterally offsetting in opposite directions from a lug-like extension 271 upwardly of the trigger-plate unit substantially midway of the length thereof.

At its forward upper portion, the trigger-plate unit 16 is formed with a stabilising lug 28 which normally fits within the longitudinal groove 24 in the lower forward portion of the receiver-unit 15. Preferably and as shown, the said stabilising lug 28 includes an annular series of upwardly-projecting fingers 29 which adapt the trigger-plate unit to be used as a wrench or other tool in assembling and disassembling various features of a firearm of which it may form a part.

Intermediate its coupling-ribs 26—26 and its stabilising lug 28, the trigger-plate unit 16 is also formed with a magazine-receiving passage 30 leading downwardly from the magazine-receiving passage 20 formed in the receiver-unit 15, which latter passage, in turn, leads downwardly from the forward portion of the bolt-receiving chamber 18. Extending transversely across the trigger-plate unit 16 about midway the length thereof, is a hammer-pin 32 upon which is pivotally mounted a hammer generally designated by the reference character 33. The said hammer is partly accommodated in the suitably recessed adjacent portion of the trigger-plate unit 16, and is provided with an arcuate guard-arm 34, for protective purposes as will hereinafter appear. At its lower forward portion, the guard-arm 34 of the hammer 33 is formed with an upwardly-facing cocking-abutment 35 which is engaged (when the firearm is cocked) by a downwardly-facing cocking-abutment 36 formed upon a rear-ward portion of the receiver-unit 15, and is normally protected by a loop-like trigger-guard 41 forming a rigid feature of the lower portion of the trigger-plate unit 16.

The trigger-pin 39 also pivotally mounts a secondary sear 42 which has pivotal movement relative to the trigger 33 and the guard-arm 37 thereof. The said secondary sear forms an essential feature of the present invention and therefore requires no detailed description herein other than to note that it is provided with a downwardly-facing cocking-abutment 43 adapted on occasion to engage with an upwardly-facing secondary cocking-abutment 44 formed upon the lower rear portion of the guard-arm 34 of the hammer 33 in a plane slightly above the cocking-abutment 35 before referred to. The secondary sear 42 is yieldingly urged to swing to a clockwise direction relative to the trigger 33 by means of a helical spring 45 thrusting at its lower end against the said trigger 33 and as its upper end against a portion of the secondary sear 42.

The entire trigger 33, and the parts carried thereby, is urged to swing to the limit of its counterclockwise movement by means of a helical trigger-spring 46 thrusting upwardly at its upper end against a portion of the trigger 33 forwardly of the trigger-pin 39 and thrusting at its lower end against an adjacent portion of the trigger-plate unit 16.

The hammer 33 may be urged to swing in a clockwise direction to effect the discharge of the firearm in any suitable manner such, for instance, as by a helical hammer-spring 47 encircling a telescoping plunger 48 which is pivoted at its lower end to the trigger-plate unit as at 49, and which thrusts upwardly against the underside of the guard-arm 34 of the trigger 33. The upper or free end of the hammer is adapted to swing through the vertical clearance-passage 21 in the rear portion of the receiver-unit 15 in moving from its cocked position to its firing position and vice versa.

When the receiver-unit 15 and trigger-plate unit are assembled together as shown in Fig. 1 and installed in a suitable stock, the said units will remain in the relative positions in which they are shown in the said figure.

In the process of demounting or disassembling the firearm for purposes of inspection, repair or the like, the receiver-unit 15 and the trigger-plate unit 16 would first jointly be removed or demounted from such stock as they may have been assembled with, after which the said trigger-plate unit 16 may be moved rearwardly relative to the receiver-unit 15 and hence in the direction required to bring out-of-registry and to disengage the coupling-ribs 26—26 of the said trigger-plate unit from the coupling-ribs 25—25 of the said receiver.

Now should the hammer 33 be in its cocked position as shown in Figs. 1 and 2, the rearward movement of the trigger-plate unit 16 relative to the receiver-unit 15 will be checked before the continuation can be disengaged from the coupling-ribs 25—25, by the engagement of the guard-arm 34 of the hammer 33 with the forwardly-facing locking-abutment 22 of the said receiver-unit. Under these conditions, the parts will occupy the relative positions in which they are shown in Figs. 1 and 2.

In order to complete the uncoupling of the trigger-plate unit 16 from the receiver-unit 15 under the circumstances just above referred to, it will be necessary to release the hammer 33 from its engagement with the rear-ward 37 of the trigger 33 and gently permit the said hammer to swing in a clockwise direction toward its firing position until its forward face engages with a stop-abutment 50 formed in the upper portion of the extension 27 of the trigger-plate unit 16. Even however, should the hammer 33 be released for free downward movement when the trigger-plate unit is in the position shown in Fig. 2 relative to the receiver-unit, the upward swinging movement of the said hammer 33 will be ineffective for discharging the firearm.

In the normal use of the firearm, the user
will soon learn that the trigger-plate unit 18 cannot be demounted from the receiver-unit 14 while the hammer 33 is in its cocked position, and will therefore take pains to see that the said hammer is in its uncocked position prior to initiating the separation of the trigger-plate unit 18 from the receiver-unit 14.

It will be noted that when the hammer is swung upwardly into the position in which it is shown by full lines in Figs. 3 and 7, its guard-arm 32 is sufficiently remote from the locking-abutment 22 of the receiver-unit 14 to permit the trigger-plate unit to be moved relatively rearwardly a distance sufficient to completely disengage the coupling-ribs 26-28 from the coupling-ribs 23-25, which position is indicated by broken lines in Fig. 3. The trigger-plate unit may then be moved directly downwardly relative to the receiver-unit 15 to effect the complete separation of the two units.

The invention may be carried out in other specific ways than those herein set forth with- out departing from the spirit and essential character of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A firearm-structure including in combination: a receiver-unit; a trigger-plate unit located adjacent the said receiver-unit; first coupling-means carried by the said receiver-unit; second coupling-means carried by the said trigger-plate unit and releasably engageable with the said first coupling-means; a locking-abutment carried by one of the said units in position for engagement by a portion of a pivotal hammer carried by the other of said units; and a pivotal hammer carried by the other of said units and including an offsetting guard-arm constructed and arranged when the said hammer is in its cocked position to engage the locking-abutment of the said unit so provided to prevent the disengagement of the two said coupling-means from each other, the said pivotal hammer being also constructed and arranged to move its said guard-arm clear of the said locking-abutment when the hammer is moved into its uncocked position.

2. A firearm-structure including in combination: a receiver-unit; a trigger-plate unit located adjacent the said receiver-unit; first coupling-means carried by the said receiver-unit; first coupling-means carried by the said trigger-plate unit and releasably engageable with the said first coupling-means; a locking-abutment carried by one of the said units in position for engagement by a portion of a pivotal hammer carried by the other of said units and including an offsetting guard-arm constructed and arranged when the said hammer is in its cocked position to engage the locking-abutment of the said unit so provided to prevent the disengagement of the two said coupling-means from each other, the said pivotal hammer being also constructed and arranged to move its said guard-arm clear of the said locking-abutment when the hammer is moved into its uncocked position.

3. A firearm-structure including in combination: a receiver-unit; a trigger-plate unit located adjacent the said receiver-unit; first coupling-means carried by the said receiver-unit; second coupling-means carried by the said trigger-plate unit and releasably engageable with the said first coupling-means; a locking-abutment carried by one of the said units in position for engagement by a portion of a pivotal hammer carried by the other of said units; and a pivotal hammer carried by the other of said units and including an offsetting guard-arm constructed and arranged when the said hammer is in its cocked position to engage the locking-abutment of the said unit so provided to prevent the disengagement of the two said coupling-means from each other, the said pivotal hammer being also constructed and arranged to move its said guard-arm clear of the said locking-abutment of the said receiver-unit when the hammer is moved into its uncocked position.
4. a receiver-unit having a substantially-vertical aperture in its lower portion and having a forwardly-facing locking-abutment located in the said aperture; a trigger-plate unit located beneath the said receiver-unit; first coupling-means carried by the said receiver-unit; second coupling-means carried by the said trigger-plate unit and constructed and arranged to be engaged with and disengaged from the said first coupling-means by a relative longitudinal shifting movement of one of the said units with respect to the other; and a pivotal hammer carried by the said trigger-plate unit and extending upwardly into the interior of the said receiver-unit through the aperture in the latter, the said pivotal hammer including an offsetting guard-arm constructed and arranged when the said hammer is in its cocked position to engage with the locking-abutment in the aperture of the said receiver-unit to prevent the disengagement of the two said coupling-means from each other, the said pivotal hammer being also constructed and arranged to move its said guard-arm clear of the said locking-abutment when the hammer is moved into its uncocked position.

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