ABSTRACT

A semi-automatic double action firearm including a frame having a hand grip positioned to be grasped when the firearm is fired, a barrel fixed to the frame, and a firing pin adapted for axial movement within a slide member slidably mounted on the frame surrounding the barrel. Resilient means positioned between the frame and the slide member and between the slide member and the firing pin, respectively, urge both the slide member and the firing pin in the direction of the muzzle, the latter exerting a greater force than the former. A trigger bar articulated to the trigger is adapted to engage the firing pin and move it rearwardly when the trigger is pulled, and to release it when the trigger reaches a predetermined position. A lever pivotally mounted at the rear of the hand grip is engaged by the user's hand and restrains the rearward motion of the slide member on the frame against the pull of the trigger. After firing, the firearm's recoil enhances the restraining force exerted by the lever until the high pressure propellant gases are discharged from the muzzle.

A resilient magazine safety bar is positioned to block the movement of the trigger bar. The weapon is operable only when the safety bar is displaced by insertion of a magazine in the magazine receiver.

A slide lock bar locks the slide in its open position on the frame when the last cartridge in the magazine is fired. The slide lock bar is designed additionally to minimize the "play" between the slide member and the frame, thereby enhancing the sighting accuracy of the weapon.

18 Claims, 14 Drawing Figures
1. Background
This invention relates to firearms, and more particularly to hand-held or shouldered semi-automatic weapons of the double action type wherein a single pull of the trigger both cocks and fires the arm.

Although as will be seen the subject invention contemplates novel features which are adaptable to firearms in a variety of forms, its principal embodiment is in the form of a semi-automatic pistol wherein a number of cartridges are carried within a removable magazine or clip which is inserted into the handle or grip of the weapon. When the weapon is fired, a sliding member mounted on the frame over the barrel and firing chamber is driven rearwardly by recoil to withdraw the spent cartridge from the firing chamber and eject it from the weapon. The sliding member is then returned to the "battery" position by a recoil spring and is adapted to strip the succeeding round from the magazine and insert it into the firing chamber in readiness for firing.

Conventional prior art semi-automatic pistols commonly incorporate an exposed hammer which is adapted to strike a firing pin to initiate the discharge of the cartridge within the chamber. In such pistols the rearward movement of the slide along the axis of the barrel moves the hammer to the "ready" or "cocked" position. Even when this type of weapon is provided with a "safety button," a danger of unintentional discharge is nonetheless present. Mechanical failure of the button and its associated shear, and human error through accident, inadvertence or oversight, have frequently led to tragedy or near tragedy when the trigger of a supposedly safe weapon was pulled. Likewise, there are many cases on record in which the relatively fragile shear has been broken, permitting the hammer to fire a loaded round left in the chamber, when the weapon was accidentally dropped.

Furthermore, although such "safeties" are ordinarily relatively easy to operate, in emergency situations the split-second delay even the simplest of them requires may prove to be the difference between life and death for a law enforcement officer.

One object of the subject invention is to provide a small compact firearm which has no hammer to be cocked, and therefore does not rely on accessory safety devices for protection against so-called accidental discharge.

Almost instantly following the impact of the firing pin with the primer in the cartridge, the propellant powder within the cartridge case is ignited and the resultant high pressure gases drive the bullet or projectile through the barrel toward the muzzle. The gases generated by a modern .45 calibre cartridge reach pressures on the order of 18,000 p.s.i. to 22,000 p.s.i. before the bullet or projectile clears the muzzle. It is the recoil opposing the thrust of these gases against the bullet which opens the slide member in weapons of this type. Over the years a great many ingenious systems have been devised to prevent the premature opening of the slide with its attendant potentially disastrous results.

The most commonly used mechanisms for holding the action closed during the period in which the gases are at a pressure considered unsafe are those in which some locking means are contrived to hold the barrel together with the breech face of the slide so that the barrel and slide or breech face move rearwardly under the influence of recoil locked together as a single unit. When the gas pressure has reached a safe level one of several mechanisms is utilized to unlock the slide from the barrel, thus allowing the slide to go into full recoil while the barrel returns to battery or some other position.

While many of these locking systems have performed satisfactorily, in most cases they have been costly to incorporate within the general design of the small arm, and many of them have been found to require considerable maintenance. In some cases the accuracy of the weapon is known to be adversely affected by the compound action of the locking mechanism.

To compound this problem, in a number of weapons of this type, the tolerances required between the moving parts are such that the slide action in many cases reduces the weapons accuracy still further.

Another object of the subject invention, accordingly, is to provide a semi-automatic firearm having a sturdy, durable, effective slide retarding mechanism which is inexpensive to produce, requires little if any maintenance, and at least does not impair the accuracy of the weapon.

As will be seen, the subject invention more than satisfies these and the previously mentioned objects.

2. Summary
Essentially a semi-automatic pistol embodying the subject invention comprises a frame having a more or less conventional hand grip positioned to be grasped when the arm is fired. A conventional barrel is fixed to the frame and a slide member is slidably mounted to the frame surrounding it.

A bore formed axially in the rear portion of the slide member receives a firing pin having a generally cylindrical body and adapted for axial movement within the bore.

A recoil spring positioned between the frame and the forward end of the slide member urges the slide member toward the muzzle. A second spring, of greater strength than the first, is positioned in the bore of the slide member behind the firing pin to urge it in the direction of the muzzle.

An elongated trigger bar is pivotally connected at one end to the trigger. Its other end carries a sear which is adapted to engage a second sear on the underside of the firing pin. When the trigger is pulled, the trigger bar moves the firing pin rearwardly. A limb projecting upwardly from the trigger bar is held in contact with the underside of the slide by a torsion spring acting between the trigger and the trigger bar at their point of articulation, and serves to rotate the trigger bar to release the firing pin sear when the trigger reaches a predetermined position in its travel.

A lever is pivotally mounted at the rear of the hand grip with its lower leg positioned to engage the web of the user's hand when the weapon is grasped for firing. The upper leg of the lever is formed to fit into a recess in the underside of the slide member. The forward end of this recess is inclined to serve as a caming surface for the free end of the upper leg of the lever.

When the weapon is fired, the recoil drives the handle rearwardly against the user's hand, thereby increasing the force exerted against the lower leg of the lever
and, consequently, the force exerted against the cam-
ing face of the recess in the slide member by the upper
leg of the lever, thus resisting rearward movement of
the slide member. The camming action between the face of
the recess and the upper lever arm ultimately forces
that arm downwardly out of the recess, thereby allow-
ing the slide to move rearwardly, but only after suffi-
cient delay to allow the bullet to reach the muzzle of
the barrel.

Even after the upper leg of the lever has been forced
from the recess, the combined force of the recoil and
the user’s grasp, acting against the lower leg of the lever,
forces the upper leg of the lever into frictional contact with the underside of the slide member,
thereby further restraining its rearward motion until the potentially dangerous propellant gases have been
discharged through the muzzle.

A resilient magazine safety bar is positioned to block
the movement of the trigger bar when the magazine
receiver in the handle is empty. The weapon is operable
only when this safety bar is displaced by insertion of a
magazine in the receiver.

A resilient slide lock bar positioned laterally of the
slide is adapted to lock the slide in its open position on
the frame when the last cartridge in the magazine is
fired. The force exerted by the slide lock bar laterally
against the slide member serves additionally to mini-
mize the “play” between the slide member and the
frame, thereby enhancing the sighting accuracy of the
weapon.

The construction and operation of a preferred em-
bodyment of the subject invention will be more fully un-
derstood, and other and further objects appreciated from a reading of the following detailed description as
illustrated by the accompanying drawings.

THE DRAWINGS

FIG. 1 is a side elevation of a hand held semi-
automatic pistol embodying the subject invention, with
a typical .45 calibre semi-automatic weapon of conven-
tional design outlined in phantom for comparative pur-
poses;

FIG. 2 is an enlarged side elevation of the pistol
shown in FIG. 1, with portions cut away to reveal its in-
nernal construction;

FIG. 3 is a fragmentary side elevation of the pistol
shown in FIG. 2 with additional portions cut away to
show the operation of the trigger, trigger bar and firing
pin assembly;

FIG. 4 is a fragmentary side elevation of FIG. 3 fur-
ther illustrating the operation of the trigger,
trigger bar and firing pin assembly;

FIG. 5 is a reduced exploded side elevation of the pi-

tol of FIG. 2 with portions of the pistol and a fragment of
its magazine cut away for illustrative purposes;

FIG. 6 is a partial side elevation of the pistol of FIG.
5 with its slide locked in the “open” position and portions
cut away for illustrative purposes;

FIG. 7 is a fragmentary section taken in the direc-
tion 7–7 of FIG. 6;

FIG. 8 is a fragmentary section taken along the line
8–8 of FIG. 3;

FIG. 9 is a fragmentary section taken in the direction
9–9 of FIG. 3;

FIG. 10 is a fragmentary section taken in the direc-
tion 10–10 of FIG. 5;

FIG. 11 is a fragmentary section taken in the direc-
tion 11–11 of FIG. 5;

FIG. 12 is a fragmentary section taken in the direc-
tion 12–12 of FIG. 2;

FIG. 13 is a perspective view of the trigger, trigger
bar and magazine safety bar assembly shown in FIG. 2;

FIG. 14 is a perspective view of the slide lock bar
shown in FIG. 2.

Wherever practicable, a single numeral is used to de-
pict identical or substantially similar components ap-
pearing in the several drawings.

DETAILED DESCRIPTION

Referring to FIG. 1, the auto-pistol 11 embodying the
subject invention is quite similar in general external ap-
pearance to the conventional .45 calibre semi-
automatic pistol 12, with two notable exceptions: the
simplicity of its novel construction permits the pistol 11
to be substantially smaller and lighter than the prior art
weapon of equivalent fire power, and pistol 11 has no
exposed hammer 13.

As shown most clearly in FIGS. 2, 3, and 4, the barrel
15 of pistol 11 is secured to the frame 17 by means such
doing. Slide member 21 is mounted on frame
17 to slide along the axis of barrel 15. In the “battery”
position only the muzzle 23 of barrel 15 protrudes through
the open forward end of slide 21. Recoil spring
25 is mounted over barrel 15 between a shoulder 27
surrounding the opening at the forward end of the slide
21 and a recessed annulus 29 formed on barrel 15.
Spring 25 urges slide 21 in the direction of muzzle 23,
and, toward the battery position.

The rear end of barrel 15 terminates in a firing cham-
ber 31 adapted to receive, in this embodiment, a .45
calibre rimless cartridge 33. When the weapon is at
battery, the breech face 35 of slide 21 abuts the base 37
of cartridge 33.

A cylindrical bore 39 is formed in the rear portion of
slide 21 in axial alignment with barrel 15 and cham-
ber 31. Firing pin 41 is sized to reciprocate axially within
bore 39. The tip 43 of firing pin 41 strikes the primer
of cartridge 33 through an opening in the breech face
35. A compression spring 45 mounted between the for-
ward wall of bore 39 and an annular shoulder 47
formed on the body of firing pin 41 urges the firing pin
41 rearwardly to maintain a safe spacing between tip 43
and the primer of cartridge 33.

The body of firing pin 41 is bored at its rear end to
receive one end of a compression spring 49. The other
end of this spring 49 is secured to the slide 21 by conve-
nient means, such as a retainer plug 53 fitted into the
rear end of slide 21 to close the bore 39.

The specific materials, configurations, dimensions and
compressive strengths of recoil spring 25, safety
spring 39, and firing pin spring 49 are more or less mat-
ters of choice, the principal condition, and a signifi-
cant feature of the invention, being that the firing pin
spring 49 be of substantially greater strength than re-
coil spring 25. In practice it has been found that a
spring rate of about 8 to 10 lbs. per inch for spring 25
and of from about 100 to 115 lbs. per inch for spring 49
are quite satisfactory for the intended purpose. Spring
45 merely urges firing pin 41 rearwardly against spring
49, and need be of only nominal strength.
A downwardly projecting sear 51 is formed on the body of firing pin 41 and extends downwardly through a slot in the underside of bore 39.

Conventional front and rear sights 53 and 55, respectively, are provided at the front and rear ends of slide 21.

Trigger 57 is mounted under frame 17, preferably by means of a pin 59. A coiled torsion spring 61 mounted on pin 59 urges the trigger 57 forwardly against the stop or shoulder 63 formed in the frame 17. A trigger guard 65 protects trigger 57 against accidental contact.

Regardless of the form of the firearm to which the subject invention is adapted, whether a side arm, a shoulder-born arm, such as a rifle, or a hip-fired assault type weapon, a handle or hand grip 67 is provided on the frame 17 to the rear of trigger 57. Preferably handle 67 is hollow and is formed with the receiver 69 adapted to receive the magazine 71 as shown in FIG. 5. Magazine 71 and its operation will be described in greater detail later.

A trigger bar 73 is pivotally mounted on the trigger 57, preferably by means of a pin 75 extending transversely across a slot or recess 77 for in the rear face of trigger 57 to receive the end of trigger bar 73. Pins 59 and 75 are aligned vertically. The construction of trigger 57 and trigger bar 73 are best seen in FIGS. 3, 4, 9, 11 and 13.

A coiled torsion spring 79 is mounted on pin 75 with one of its legs bearing downwardly and forwardly against trigger 57 and the other upwardly against trigger bar 73, thereby urging the remote end of trigger bar 73 upwardly.

At its remote end trigger bar 73 is formed with an upper leg 79 and a lower leg 81. Upper leg 79 carries a trigger sear 83 adapted to cooperate with sear 51 on firing pin 41. An upwardly projecting rim or lobe 85 formed on trigger bar 73 is maintained in sliding contact with the smooth, flat underside of slide 21 by spring 79.

From the foregoing it will be observed that when force is exerted rearwardly on trigger 57, the trigger rotates rearwardly and upwardly around pin 59, carrying pin 75 in an arc centered on pin 59. The effect on trigger bar 73 is compounded: The entire trigger bar 73 is moved rearwardly, while at the same time upper leg 79 is rotated downwardly around the fulcrum formed at the moving point of contact between limb 85 and the underside of slide 21.

It will be apparent that the same compound motion can be achieved by a variety of combinations of mounting arrangements for trigger 57 and trigger bar 73 and, while none of these alternative arrangements is shown or specifically described, all of them must be considered to be within the scope of the subject invention.

It will be observed, likewise, that because of the disproportionate strengths of springs 25 and 49, unless slide 21 is restrained against rearward motion, the effect of pulling the trigger 57 will be merely to transmit the rearward movement of trigger bar 73 through sears 83 and 51, firing pin 41 and spring 49 to slide 21. Firing pin 41 will move rearwardly with slide 21, but spring 49 will not be compressed. Thus the weapon is "safe" and will not fire.

As mentioned earlier, in all forms of the subject invention a handle or hand grip 67 is formed on the frame 17 to the rear of trigger 57. The position and size of handle 67 are such that to fire the weapon this handle 67 must be grasped by the user.

As best seen in FIGS. 5 and 6, a lever or hand stirrup 95 is pivotally mounted on frame 17, preferably by means of a pin 97 positioned between its lower leg 101 and upper leg 103. Lower leg 101 extends downwardly along the rear face of handle 67 and is shaped to engage the web between the thumb and first finger of the user's hand when the handle 67 is grasped for firing. Preferably the lever 95 has a pair of upper legs 103 straddling the frame 17. Lips 105 serve to strengthen legs 103.

In the embodiment illustrated here the sides of slide 21 extend downwardly over the top of frame 17 to form a pair of skirts 109 terminating in downwardly exposed lips 111. A recess 113 is formed, preferably in each of these lips 111, to receive the end of upper leg 103 of lever 95 when slide 21 is in the battery position. A small compression spring 115 seated in a bore 117 provided in the rear face of handle 67 acts against lower leg 101 of lever 95 rearwardly, thereby urging upper legs 103 out of recesses 113. Unless and until stirrup 95 is engaged in lower leg 101 forced against the rear face of handle 67 to rotate upper legs 103 into recesses 113, the weapon remains safe, i.e., incapable of being fired unintentionally.

The forwardmost faces 21 of recesses 113 are inclined at an angle to the lips 111 and slide 21 to serve as a camming surface for the end of upper legs 103. It has been found that an angle of between about 50° and about 60° is satisfactory for this purpose, and an angle of about 55° appears to be the optimum for a pistol firing the .45 calibre rimless cartridge.

When handle 67 is grasped for firing and the trigger 57 pulled, the force exerted by the user's hand against stirrup 95 forces upper legs 103 into recesses 113 and effectively prevents slide 21 from moving rearwardly on frame 17.

As illustrated in FIGS. 5 and 6, while sear 83 is in engagement with sear 51 the rearward motion of trigger bar 73 moves firing pin 41 rearwardly, compressing spring 49. At a predetermined point in the rearward travel of trigger 57, the downward motion of upper leg 79 abruptly disengages sear 83 from sear 51, allowing compressed spring 49 to thrust firing pin 41 forwardly with sufficient force to overcome spring 45 and discharge the cartridge 33.

As the bullet 123 leaves the cartridge 33, the gas pressure within barrel 15 quickly builds to a peak, and the recoil force drives the weapon rearwardly against the user's hand. The greater the recoil, the greater the force exerted by the weapon. A substantial part of this force is directed against lower leg 101 of stirrup 95, which acts as a bell crank, and through upper leg 103 against the camming faces 121 of recesses 113. This force opposes the recoil force exerted rearwardly against slide 21, with the result that the end of upper leg 103 eventually slips out of recesses 113 and slide 21 is released to move rearwardly.

As long as the weapon is in recoil, the force exerted against the user's hand is transmitted through the bell crank action of stirrup 95 to urge the upper legs 103 upwardly in frictional contact with the lips 111 of slide 21, thereby retarding the rearward motion of slide 21.

To enhance this slide-retarding action it has been found most useful to form stirrup 95 so that the ends
of upper legs 103 project above their axis of rotation, pin 97. This is readily accomplished by forming legs 103 at an angle of between 110° and about 130°, and preferably about 125° (measured from the plane of lips 105, through the center of pin 97, to the plane of the outer face of lower leg 101).

By appropriate design of stirrup 95 and recesses 113 the rearward movement of slide 21 to its open position can readily be timed to coincide with the departure of bullet 123 from the barrel 15 and the accompanying release of the high pressure gases through muzzle 23.

Two additional safety features make the subject invention virtually fullproof. These are best illustrated by FIGS. 1, 5, 6, 7, 9, 11, 12 and 14.

The first of these is a magazine safety bar 125 of spring steel fixedly attached by means such as pin 127 to handle 67 and extending upwardly into magazine receiver 69 within handle 67. Bar 125 is positioned so that its upper end 129 is normally in alignment with the end of lower leg 81 of trigger bar 73. When arm 125 and leg 81 are aligned trigger bar 73 cannot be moved rearwardly and the weapon cannot be fired.

An ear 131 extending laterally of bar 125 is formed to be engaged by magazine 71 when the magazine is inserted into receiver 69. With the magazine 71 in place bar 125 is forced to the side so that its end 129 is out of alignment with the end of lower leg 81. Trigger bar 73 is then free to move rearwardly when trigger 57 is squeezed.

The second safety feature is a slide lock which secures the slide 21 in its fully open position after the last round in the magazine 71 is inserted in chamber 31.

When cartridges 33 are inserted into magazine 71 they depress a follower 135. Compression spring 137 positioned below follower 135 urges the follower 135 and cartridges 33 upwardly. As in conventional automatic pistols the upper end of magazine 71 extends upwardly into the cartridge receiver just to the rear of the breech, and the slide 21 is adapted to strip the uppermost cartridge from the magazine and thrust it into the breech of barrel 15 during its return from the open position to battery after the preceding round has been fired and ejected from the weapon.

When the last round has been stripped from the magazine 71 a toe 141 formed on follower 135 engages slide locking safety bar 143.

Safety bar 143 is formed of spring steel with a permanent bow or lateral curve and is pivotally mounted to the side of frame 17 by means such as pin 145. The bowed bar 143 exerts a force laterally against the inside of the adjacent skirt 109 of slide 21. The salutary effect of this arrangement is that the "play" between slide 21 and frame 17 is taken up by bar 143 and the opposite skirt 109 of slide 21 is continuously urged into contact with the adjacent side of frame 17.

With conventional weapons since the slide is free to position itself laterally on the frame each time it completes the recoil cycle, consistently accurate sighting is impossible. This problem is effectively eliminated in the subject invention because bar 143 insures the return of slide 21 to substantially the same lateral position on frame 17 after each cycle.

A second recess 147 is formed in the skirt 109 adjacent safety bar 143 to receive the free rearwardly directed end 151 of bar 143 when slide 21 is in or near its fully open position. Inwardly directed ear 153 on arm 143 is adapted to be engaged by the toe 141 on magazine follower 135 after the last cartridge 33 is stripped from magazine 71 and, under the influence of spring 137 urges the end 151 into recess 147 when the two come into registry after the last round is fired. As shown in FIG. 6 slide 21 is then locked in the open position.

To release the slide the exposed end 151 is manually rotated downwardly out of recess 147. The face of end 151 may be knurled as shown to facilitate this operation.

It will be noted that the two safety features last mentioned effectively make the weapon fail-safe. If the last round is fired while the magazine 71 is still in its receiver 69, the slide will be locked open by safety bar 143. If the magazine 71 is removed from the weapon before the chambered cartridge 33 is fired, magazine safety bar 125 will prevent the trigger from being pulled and the round discharged unintentionally.

Referring to FIG. 3, spent cartridges are removed from the firing chamber 31 and ejected from the weapon by extractor claw 155 at the forward end of extractor 157. A novel feature in the extractor assembly resides in the use of a retainer pin 159 slipped into grooves formed in the body of slide 21 and in the adjacent underside of extractor 157 itself to secure the extractor to slide 21. This device greatly facilitates the replacement of the extractor should the need to do so ever arise.

FIGS. 3 and 10 most clearly illustrate another novel features of the subject invention which facilitates its assembly, namely the use of a transverse slide lock pin 165 which may easily be removed in the field without special tools to release the slide 21 from frame 17. The ends of slide lock pin 165 extend laterally of frame 17 and slidingly engage slide lock channels 167 formed along the inner faces of skirts 109. When pin 165 is withdrawn by forcing it laterally through slot 167 in the skirt 109 of slide 21, slide 21 may be drawn rearwardly and upwardly free of barrel 15 and frame 17. An opening 169 is provided in the skirt 109 opposite slot 167 for the insertion of any convenient tool or rod to force pin 165 through slot 167.

It will be understood that a number of additional features, such as a magazine safety, a magazine release mechanism, and other components of relatively conventional design have been omitted from this description in the interest of brevity.

Further, the invention is not intended to be limited to the specific form of the embodiment shown, which is presented for illustrative purposes only. Rather, it contemplates all of the variations and modifications coming within the scope of the claims.

What is claimed is:

1. A semi-automatic double action firearm comprising:
   a frame including a hand grip adapted to be grasped by the user when the firearm is fired;
   a barrel affixed to said frame having a muzzle and a firing chamber adapted to receive a cartridge;
   a slide member surrounding said barrel mounted for axial movement on said frame;
   first resilient means between said slide member and said barrel urging said slide member toward the muzzle of said barrel;
   a firing pin mounted for axial movement within said slide member;
second resilient means between said firing pin and said slide member urging said firing pin toward the muzzle of said barrel with a force greater than that exerted by said first resilient means on said slide member;

a trigger mounted for motion relative to said frame;

a trigger bar articulated to said trigger and adapted to engage said firing pin and move it in the direction away from said muzzle in response to movement of said trigger and to release said firing pin when the trigger has moved a predetermined distance; and

lever means mounted on said frame and adapted to restrain said slide member against movement relative to said frame when said hand grip is grasped for firing.

2. The firearm of claim 1 wherein:
said trigger is pivotally mounted on said frame and depends therefrom;

one end of said trigger bar is pivotally mounted on said trigger;

a first leg of said trigger bar is spaced from said end and carries a first sear adapted to releaseably engage a second sear formed on said firing pin; and

a limb formed on said trigger bar intermediate said end and said first sear is adapted to cooperate with said frame to cause said first sear to rotate about an axis of rotation intermediate said end and said first sear.

3. The firearm of claim 2 wherein:
said limb is adapted to engage slidingly the underside of said frame to provide an imaginary axis of rotation for said first sear; and

third resilient means effectively acting between said frame and said trigger bar urge said limb into contact with said frame.

4. The firearm of claim 3 wherein:
said trigger is provided with a recess; the end of said trigger bar is pivotally supported in said recess by a pin positioned transversely thereof; and

said third resilient means is a torsion spring mounted on said pin and having one of its legs bearing on said trigger and the other of its legs bearing on said trigger bar.

5. The firearm of claim 4 wherein:
said lever means comprise a bell crank having at least one upper leg adapted to engage said slide member and a lower leg extending downwardly along the rear of said hand grip adapted to engage the web of the user's hand when said hand grip is grasped for firing; and

said bell crank is pivotally mounted on said frame for rotation about an axis intermediate said upper and lower legs, whereby said upper leg is urged into engagement with said slide member when force is exerted against said lower leg in the direction of said muzzle.

6. The firearm of claim 5 wherein:
a recess is formed in said slide member to receive the end of the upper leg of said bell crank when said slide member is in the battery position; and

said bell crank is adapted to urge the end of said upper leg into said recess in response to force exerted against the lower leg in a direction toward said muzzle.

7. The firearm of claim 6 wherein:
the axis of rotation of said bell crank lies below said slide member;

the upper leg of said bell crank forms an obtuse angle with the lower leg thereof whereby the end of said upper leg is at all times above the axis of rotation of said bell crank; and

resilient means acting between said frame and said bell crank urge the upper leg thereof out of engagement with said slide member.

8. The firearm of claim 7 wherein:
the forwardmost face of said recess is inclined to serve as a camming surface for the end of the upper leg of said bell crank; and

the end of said upper leg is adapted to cooperate with said inclined face to urge said end out of engagement with said recess when force is exerted against said slide member in the direction away from said muzzle.

9. The firearm of claim 8 wherein:
the sides of said slide member terminate in a pair of downwardly exposed lips extending longitudinally of said slide member;

said recess is formed in at least one of said lips; and

the inclined face of said recess forms an angle of between about 50° and about 60° with said lower lip.

10. The firearm of claim 9 wherein:
said inclined face forms an angle of about 55° with said lower lip.

11. The firearm of claim 8 wherein:
the angle formed by the upper and lower legs of said bell crank is between about 110° and about 130°.

12. The firearm of claim 11 wherein:
the angle formed by the upper and lower legs of said bell crank is 125°.

13. The firearm of claim 3 comprising:
a receiver in said frame adapted to releasably receive a magazine;

a magazine adapted to be inserted into said receiver; and

resilient means mounted on said frame and adapted to releasably engage and prevent the rearward movement of said trigger bar, when said magazine is not in said receiver.

14. The firearm of claim 13 wherein:
said trigger bar is formed with a lower leg extending downwardly and rearwardly thereof;

said resilient means comprises a resilient member mounted on said frame within said receiver to be engagable by said lower leg of the trigger bar when in its normal rest position; and

said resilient member is adapted to cooperate with said magazine when the latter is inserted into said receiver, thereby to be displaced out of engagement with said lower leg of the trigger bar.

15. The firearm of claim 14 wherein:
said resilient member is provided with an ear protruding laterally therefrom in the path followed by said magazine when the latter is inserted into said receiver and adapted to be engaged by said magazine, thereby to displace said resilient member laterally of said lower leg of the trigger bar.
16. The firearm of claim 13 comprising:
an upwardly biased follower in said magazine; and
a slide lock bar positioned between said slide mem-
ber and said frame and adapted to cooperate with
said follower to engage and immobilize said slide
member when the magazine is empty.
17. The firearm of claim 16 wherein:
one end of said slide lock bar is pivotably attached to
said frame;
said slide member is provided with a recess adapted
to releasably receive the other end of said slide
lock bar; and
said follower is adapted to engage said other end and
urge it into said recess when the two are in registry
and the magazine is empty.
18. The firearm of claim 17 wherein:
said slide lock bar is resilient and is bowed trans-
versely to exert a continuous lateral force between
said frame and said slide member.

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