SMGs

By Clyde Barrow

We have received a lot of reader comments about submachine guns. The topic generates strong feelings both pro and con.

The picture created by those who hold the SMG in low regard is one of a maniac wildly spraying the landscape, firing entire 30 round magazines with each burst. "My god, he's wasting ammo!"

Proponents will describe special combat firing techniques, relate tales of hits at incredible distances and swear that the SMG has rendered the autopistol and light assault rifle obsolete.

As usual, the truth falls somewhere between these two extremes. To most people, SMG means full auto. This is only one of the characteristics of these weapons, and need not be considered a detriment. Most modern SMG designs also allow for semi auto fire, full auto being used only selectively, as the need arises.

The primary attractions of SMGs are one handed use, large magazine capacity and simplicity of design which allows for low cost production in small home workshops, without the need to resort to investment castings, milling machines, and other exotic manufacturing techniques and equipment.

The basic SMG type of weapon is ideal for small group or individual manufacture for the following reasons.

a. The receiver is usually based on either easily obtained and worked round steel tubing, or is designed around a square or rectangular box shape. Examples of the round type of receiver include the Sten, Sterling, S & W M76, M3 Grease Gun, and the German MP40. The square or box receiver is used in both the Israeli UZI, and the Ingram M10 & M11 submachine pistols.

b. SMG's are designed to be cheap and easy to produce and are geared to a military market. Therefore, the design can be based on practical considerations alone, without the need to make concessions to appearance. Appearance is a major factor when designing a commercial gun for commercial sales, and can greatly increase the cost and complicate the manufacturing process.

c. Most SMG's fire from a cocked or open bolt and contain a fixed firing pin. The inertia of the bolt moving forward eliminated the necessity for complex breech locking mechanisms or stiff recoil springs found in commercialy available semi auto guns. This open bolt firing allows the weapon to be both lighter in weight and simplier in design. The open bolt or slam-bang type of action does jar the weapon upon firing, and therefore some concession is made to target type accuracy.

The next few PMA issues will feature material on some of the more popular modern SMGs. While we haven' yet been able to purchase a set of plans for PMA publication, we have found sources of several excellent designs geared toward home manufacture. (See Roy Mc Laughlin's ad this issue and The Void's ad for Holmes' Home Workshop Book in previous issues, both are good sets of plans.)

If you have a design for sale, want to buy or sell specific SMG components, or would like to see material on some specific SMG, drop me a card care of PMA and we'll see what we can do.

The issue features a reprint of the patent for Gordon Ingram's M10 and M11 (MAC) Machine Pistols. All parts for these guns are available except the lower receiver, and we hope to have a set of construction plans for the lower unit in a future issue. If you are interested in the MAC 10 or 11 unit drop George Liu a line (see classified ads this issue). He sells complete registered SMGs to qualified buyers as well as all replacement parts and several reprints of articles that have been written about the M10 and M11.

3,651,736

BOLT HANDLE AND PISTOL GRIP MAGAZINE FOR AN AUTOMATIC FIREARM

Automatic weapons of the submachine gun type are sometimes referred to as machine pistols and such weapons must be light in weight and efficient in operation.

According to this invention weight of the weapon is kept to a minimum by constructing certain elements so that they perform two or more functions. For example, the trigger guard of this invention is arranged in such manner as to afford protection for the outwardly protruding trigger and also so as to function as guide means whereby rounds of ammunition are directed into the breech end of the gun barrel. According to another feature of the invention, the bolt handle is arranged so as to provide manual means for operating the bolt from its closed to its open position and vice versa and in addition the bolt handle is movably mounted on the bolt so as to form a locking relationship with an enlarged end of the slot formed in the receiver and in which the bolt handle is slidable. In addition, the bolt handle is provided with a sight path which accommodates the passage of liquid in alignment with the front and rear sights when the bolt is unlocked but which precludes sighting when the bolt is locked. In this manner a visual indication of the locked and unlocked condition of the bolt is afforded.

For a better understanding of the invention reference may be had to the following detailed description taken in conjunction with the accompanying drawing in which

FIG. 1 is a side view of a sub-machine gun constructed according to the invention;

FIG. 2 is a top view of the gun shown in FIG. 1;

FIGS. 2A and 2B are views taken along the line designated 2—2 in FIG. 2 and which respectively depict the bolt handle in locked and unlocked condition;

FIG. 3 is a side view partially sectioned and similar to FIG. 1;

FIGS. 3A and 3B are views taken along the line designated 3—3 in FIG. 3 and depict respectively the bolt handle in locked and unlocked positions;

FIG. 4 is an enlarged side view partially in section and which shows the bolt in its extreme open position ready for the initiation of a firing operation by the trigger;

FIG. 5 is a view similar to FIG. 4 but showing the bolt in an intermediate position;

FIG. 6 is a view similar to FIGS. 4 and 5 but showing the bolt in its closed firing position;

FIGS. 7 and 8 are enlarged views partially in section of the mechanism which depict the extractor and the ejector at the beginning of an ejecting operation and at the completion thereof respectively and in which

FIG. 9 is a sectional view taken along the line 9—9 in FIG. 1.

In the drawings the numeral 1 designates the frame structure of the weapon to the bottom portion of which a magazine housing designated by the numeral 2 is affixed. A hand gripping portion 3 forms a part of magazine housing 2 and the numeral 4 designates a conventional removable magazine structure.

The trigger is of conventional construction and is designated by the numeral 5. Trigger 5 is pivotally mounted on pin 6 secured to frame 1 in a manner well known in the art. The numeral 7 generally designates a trigger guard which is affixed at one end to the frame 1 as by welding designated by the numeral 8. Trigger guard 7 is provided at the other end with an inwardly extending portion 9 which serves not only as a portion of the trigger guard but which also serves as guide means whereby rounds of ammunition from the magazine 4 are directed into the breech end of the barrel. The numeral 10 designates an intermediate portion of the trigger guard 7 which protrudes outwardly and functions in the conventional manner as a guard for trigger 5.

In order to facilitate secure holding of the gun by the user, a strap 11 is mounted on bracket 12 to the frame of the weapon.

The barrel of the weapon is fixedly mounted to the frame and is designated by the numeral 13. Barrel 13 is arranged to extend inwardly into the receiver 14. As is apparent from FIG. 9 the receiver 14 is supported at 14a and at 14b by lateral portions of the trigger guard 7.

Front sight 15 is affixed in conventional manner to the forward end of receiver 14 and rear sight 16 is affixed by pins 17 and 18 to the frame 1.

A retractable stock 19 is mounted on a pair of rods 20 which are slidable into and out of the frame structure 1.

Bolt 21 is slidably mounted within receiver 14 and is provided with a cavity at its lower right hand portion as viewed in FIG. 3 which is reciprocal relative to the breech portion 22 of barrel 13. Bolt 21 is biased toward the right as viewed in FIG. 3 by recoil spring 23 which is disposed about rod 24. Rod 24 is affixed at its left hand end as viewed in FIG. 3 to the frame structure 1 and is received within a passage formed in bolt 21 so that the rod 23 is slidably related to bolt 21.

For the purpose of manually operating bolt 21 from its open to its closed position and vice versa, a manually operable handle 25 is provided in accordance with one feature of this invention. Handle 25 is rotatable about its vertical axis and is held in a particular position by means of locking pin 26 which is biased toward the left by a spring 27 and which seats within recesses formed on the sides of handle 25 such as are indicated by the numerals 28 and 29. It will be understood that recesses such as 28 and 29 are disposed about the periphery of handle 25 and preferably are four in number. Handle 25 extends through slot 30 formed in the upper portion of receiver 14. Slot 30 is constructed with enlarged end portions 31 and 32.

As is apparent from FIGS. 2A, 2B, 3A and 3B, the part of handle 25 which is slidable within slot 30 is formed with a major axis and a minor axis so that when the major axis is disposed in perpendicular relationship to slot 30 and with the handle 25 disposed within the enlarged portion 31 or 32 of slot 30, the bolt 21 is locked in position. Of course the bolt is locked in its closed position when handle 25 is locked within the enlarged portion 32 of slot 30. On the other hand, when the handle 25 is disposed in its locked position in enlarged portion 31 of slot 30, the bolt is locked in its open position. With the bolt handle rotated to the unlocked position as shown in FIGS. 2B and 3B, the bolt 21 is freely slidable from left to right and vice versa.

Bolt handle 25 is provided with a sight passage 33 which al-

lows sighting along the front and rear sights 15 and 16 when the bolt handle 25 is disposed in an unlocked position.

On the other hand, when the bolt handle is arranged in locked position, the sight passage in handle 25 is disposed in transverse relationship to the line of sight defined by front sight 15 and rear sight 16 thereby affording a ready visual indication of the locked condition of the bolt.

For the purpose of securing the removable magazine 4 in position within magazine housing 2, a rotatable latch 34 is pivotally mounted on pin 35 within the hand grip portion 3 of magazine housing 2. Furthermore latch 34 is biased in a clockwise direction toward latching position by a compression spring 36 to cause the latching surface 37 of latch 34 to ride underneath the latching surface 38 formed in magazine 4. Thus as shown in FIG. 3, the magazine 4 is held in its service position.

In order to remove magazine 4, manual pressure is applied to projecting portion 39 of latch 34 to cause the latch to rotate in a counterclockwise direction about pin 35. This action releases latching surface 37 from latching surface 38 and allows the magazine 4 to be removed downwardly in conventional fashion.

For the purpose of biasing ammunition rounds upwardly in a conventional manner, a spring 40 is provided which is of the compressional type and which functions in known manner as is obvious from FIG. 3.

For controlling the operation of bolt 21 by means of trigger 5, a sear 41 is provided with a latching surface 42 which engages the lower right hand corner 43 of bolt 21 to hold the bolt in its extreme left hand position. Sear 41 is pivotally mounted on pin 44 supported on frame 1. Sear 41 is biased in a clockwise direction about pin 44 by means of compression spring 45. A pin 46 is mounted on sear 41 and affords a surface for engagement by trigger 5. Thus in order to fire the weapon and with the parts disposed in the positions depicted in FIG. 4, it is simply necessary manually to rotate trigger 5 in a clockwise direction about its pin 6. This action causes the trigger 5 to rotate sear 41 in a counterclockwise direction about pin 44 due to the engagement of trigger 5 with pin 46. Rotation of sear 41 causes its latching surface 42 to disengage the lower right hand latching surface 43 of bolt 21. When the bolt is thus released, recoil spring 23 drives the bolt 21 toward the right causing the round of ammunition designated R1 to slide upwardly and toward the right along guide portion 9 of trigger guard 7 as shown for example in FIG. 5. With round R1 seated within the breech portion 22 of barrel 13, firing pin 47 engages the cap portion of round R1 and fires the round. The projectile P1 proceeds outwardly toward the right in conventional fashion. The pressure developed urges the cartridge case C1 toward the left which action drives the bolt 21 toward the left against the action of recoil spring 23. Of course the weapon continues to fire automatically in known manner as long as trigger 5 is depressed.

Cartridge case such as C1 is extracted from the breech 22 of barrel 13 by an extractor designated for example in FIG. 7 by the numeral 48. As the cartridge case such as C1 moves toward the left in unison with the bolt 21, ejector pin 49 strikes the cartridge case C1 and drives the case downwardly and outwardly through the ejector opening 50 formed in frame 1. This action is depicted in FIG. 8. Of course the ejector pin 49 is disposed within a passageway 51 formed in bolt 21 so that there is a slidable relationship between the bolt 21 and ejector pin 49 which pin is fixed in position relative to frame 1. The extreme right hand end 52 of ejector pin 49 simply engages the lower side portion of cartridge case C1 and forces the case to swing out of contact with the jaws of the extractor 48.

The stock 19 as explained above is retractably mounted on the frame 1 by virtue of the slidable relationship of rods 20 with the frame 1. Rods 20 are provided with a pair of notches which cooperate with manually controlled transversely disposed locking rods. For example, outwardly protruding manually engageable pin 53 is engageable with transversely disposed locking rods 54 and 55 which cooperate with a transverse notch formed in rods 20. Rods 54 and 55 together with the manually operable element 53 are biased downwardly by compression spring 56 which is mounted within manually operable element 53. Spring 56 at its upper end is seated against plate 57 secured at its forward and rear portions to transversely disposed rods 58 and 59 which are mounted at their ends in fixed relationship on frame structure 1. Thus with the stock 19 disposed in its retracted position as shown in FIG. 3, upward pressure on manually operable release element 53 elevates the transversely disposed locking rods 54 and 55 and causes those rods to disengage the notches formed in rods 20 and allows the rods 20 to be withdrawn toward the left. When the right hand notch of rods 20 (not shown) engages the downwardly biased locking rods 54 and 55, the stock 19 is locked in its outwardly extended position. In this position the weapon may be fired by resting the stock 19 against the shoulder hip, chest or the like of the user. In order to retract the stock 19, the element 53 is pushed upwardly and the stock pushed inwardly into the locking position shown in FIG. 3.

Safety element 60 is movable by pin 61 manually in a transverse direction about pin 62 as a center so as to engage the sear 41 at the rear thereof thereby to prevent bolt releasing movement of the sear.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

I claim:

1. A firearm comprising a frame, a receiver mounted on said frame, a barrel mounted on said receiver, a bolt mounted in said receiver and telescopically movable relative to the breech end of said barrel, a firing pin fixedly positioned on a portion of the bolt so located relative to the breech end of the barrel as to come into contact with the free end of a cartridge of a round of ammunition in the breech end of the barrel upon release of the bolt from its open position, recoil spring means arranged to bias said bolt toward firing position, means including a trigger and sear movably mounted on said frame and operable to release said bolt from its open position to initiate a firing operation, a magazine mounted on said frame with its discharge portion adjacent the breech end of said barrel, a trigger guard fixedly mounted on said frame and having an intermediate portion extending from said frame outwardly and in enveloping relation to said trigger, said trigger guard being arranged with one end thereof disposed adjacent the discharge portion of said magazine and extending toward the breech end of said barrel for guiding rounds of ammunition into the breech end of said barrel prior to firing, and a bolt handle •

movably mounted on said bolt and protruding outwardly through a longitudinal slot formed in said receiver, said slot and said bolt handle being configured so as to prevent movement of said bolt relative to said receiver for one position of said bolt handle relative to said bolt and so as to accommodate movement of said bolt relative to said receiver for another position of said bolt handle relative to said bolt.

2. A firearm comprising a frame, a receiver mounted on said frame, a barrel mounted on said receiver, a bolt mounted in said receiver and telescopically movable relative to the breech end of said barrel, recoil spring means arranged to bias said bolt toward firing position, means including a trigger and sear movably mounted on said frame and operable to release said bolt from its open position to initiate a firing operation, a magazine mounted on said frame with its discharge portion adjacent the breech end of said barrel, and a trigger guard fixedly mounted on said frame and having an intermediate portion extending from said frame outwardly and in enveloping relation to said trigger, said trigger guard being arranged with one end thereof extending inwardly into the interior portion of said frame through an opening formed therein and disposed somewhat to the rear of the breech end of said barrel and said one end of said trigger guard being configured to define an upwardly inclined path for guiding rounds of ammunition into the breech end of said barrel prior to firing.

3. A firearm according to claim 2 wherein the other end of said trigger guard is fixedly mounted on said frame immediately forward of said trigger.

4. A firearm comprising a frame, a receiver mounted on said frame, a barrel mounted on said receiver, a bolt mounted in said receiver and telescopically movable relative to the breech end of said barrel, recoil spring means arranged to bias said bolt toward firing position, means including a trigger and sear movably mounted on said frame and operable to release said bolt from its open position to initiate a firing operation, a magazine mounted on said frame with its discharge portion adjacent the breech end of said barrel, and a trigger guard fixedly mounted on said frame and having an intermediate portion extending from said frame outwardly and in enveloping relation to said trigger, said trigger guard being arranged with one end thereof disposed adjacent the discharge portion of said magazine and extending toward the breech end of said barrel for guiding rounds of ammunition into the breech end of said barrel prior to firing and said one end of said trigger guard being provided with lateral portions for engaging lower parts of said receiver and for affording support therefor.

5. A firearm comprising a frame, a receiver mounted on said frame, a barrel mounted on said receiver, a bolt mounted in said receiver and telescopically movable relative to the breech end of said barrel, recoil spring means arranged to bias said bolt toward firing position, a bolt handle movably mounted on said bolt and protruding outwardly through a longitudinal slot formed in said receiver, said slot and said bolt handle being configured so as to prevent movement of said bolt relative to said receiver for one position of said bolt handle relative to said bolt and so as to accommodate movement of said bolt relative to said receiver for another position of said bolt handle relative to said bolt, and a sight passage being formed in said bolt handle and arranged to accommodate sighting when said bolt handle is disposed in unlocked condition but not when said bolt handle is in a bolt locking position.

6. A firearm according to claim 5, further comprising at least one sight aligned with the bolt handle.

7. A firearm according to claim 5, further comprising front and rear sights aligned with the bolt handle.

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25MM FLARE GUN CONVERSION BY THE AMATEUR

Here are the plans for modifying a flare gun to fire .22 long rifle ammo.

Articles Needed:

1. a .25 mm to 12 gauge adapter or reducer, this converter is available from Olin Corp., Box 107, Peru Indiana 46970. Price $3
2. a 12 gauge to 22 LR shell shrinker, price $12.95, available from Shell Shrinker Industries, Box 462, Fillmore, California 93015. (They also make a neat gun storage safe)
3. a .25 mm flare gun. Olin Corp. sells one for about $40. A.C.A. Inc. Box F, Chicago Ridge, Ill. 60415 sells one for $19.95. Either one works equally well, but the cheaper one needs an assist from a rubber band after the first few shots.

By simply taking a hacksaw and sawing the .25 mm adapter just above the ridge on the inside, you are halfway home. Olin made the adapter with the ridge so that it would accomodate a 12 gauge flare but not a 12 gauge shot-shell. If you saw it below the ridge, you will find the adapter will accommodate a shotgun shell. This is not advised because then you have an N.F.A. weapon which is unsafe to use. If you saw if off just above the ridge, it will still not accept a 12 gauge shotgun shell, but you can hammer the stainless steel shell shrinker into the aluminum adapter. It will not easily come apart this way, but to play it safe you may want to weld or solder it in place. You then place the adapter, the shell shrinker, and a 22 rim fire bullet in the flare gun as you would if you were going to fire a flare. You now have a sanitized, single-shot .22 LR pistol, with a possible bell-type sound depressor. (contact silencer) It is easy to make, requires only a hacksaw as a tool, and uses easily available materials. The disadvantages are that it is single-shot, possibly illegal

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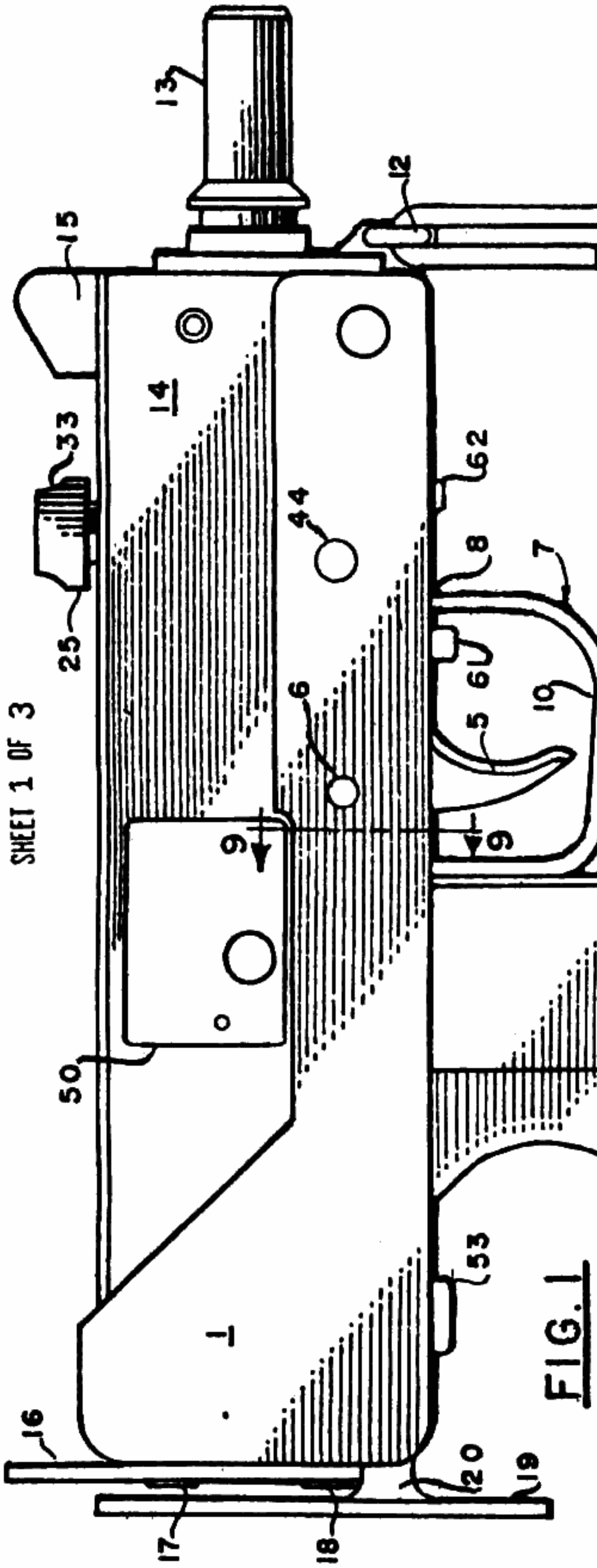

FIG. 1

FIG. 7

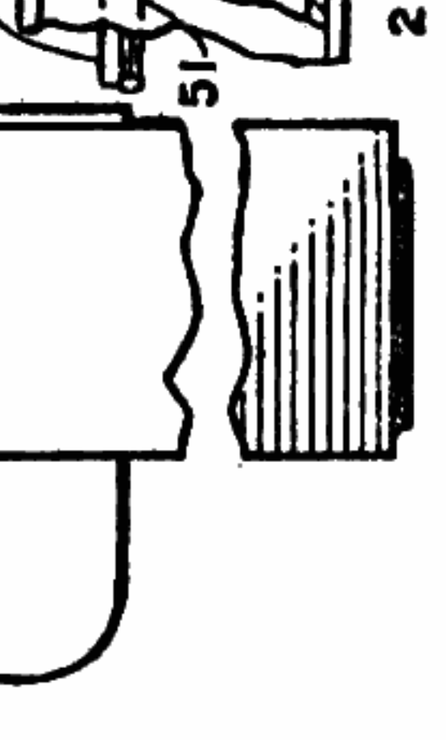

FIG. 8

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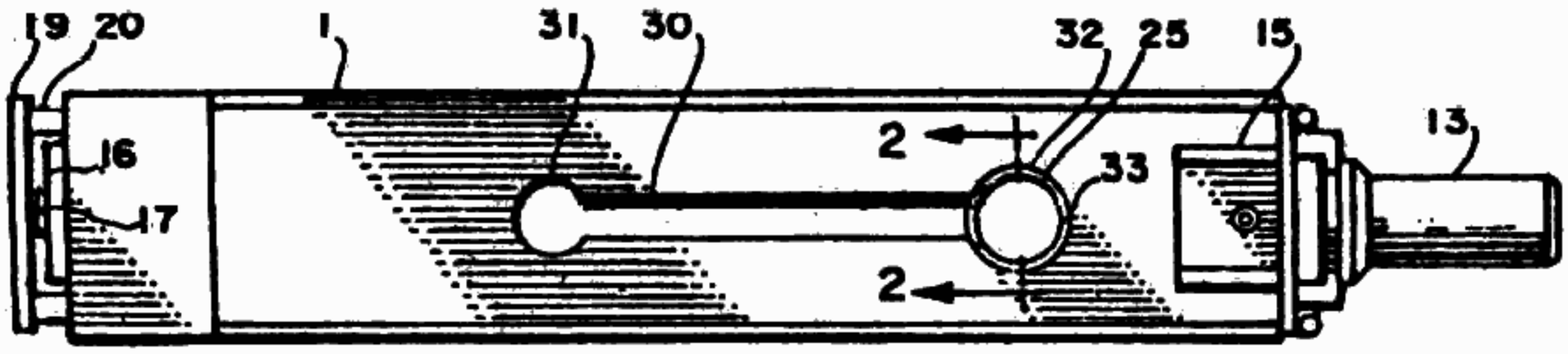

FIG. 2

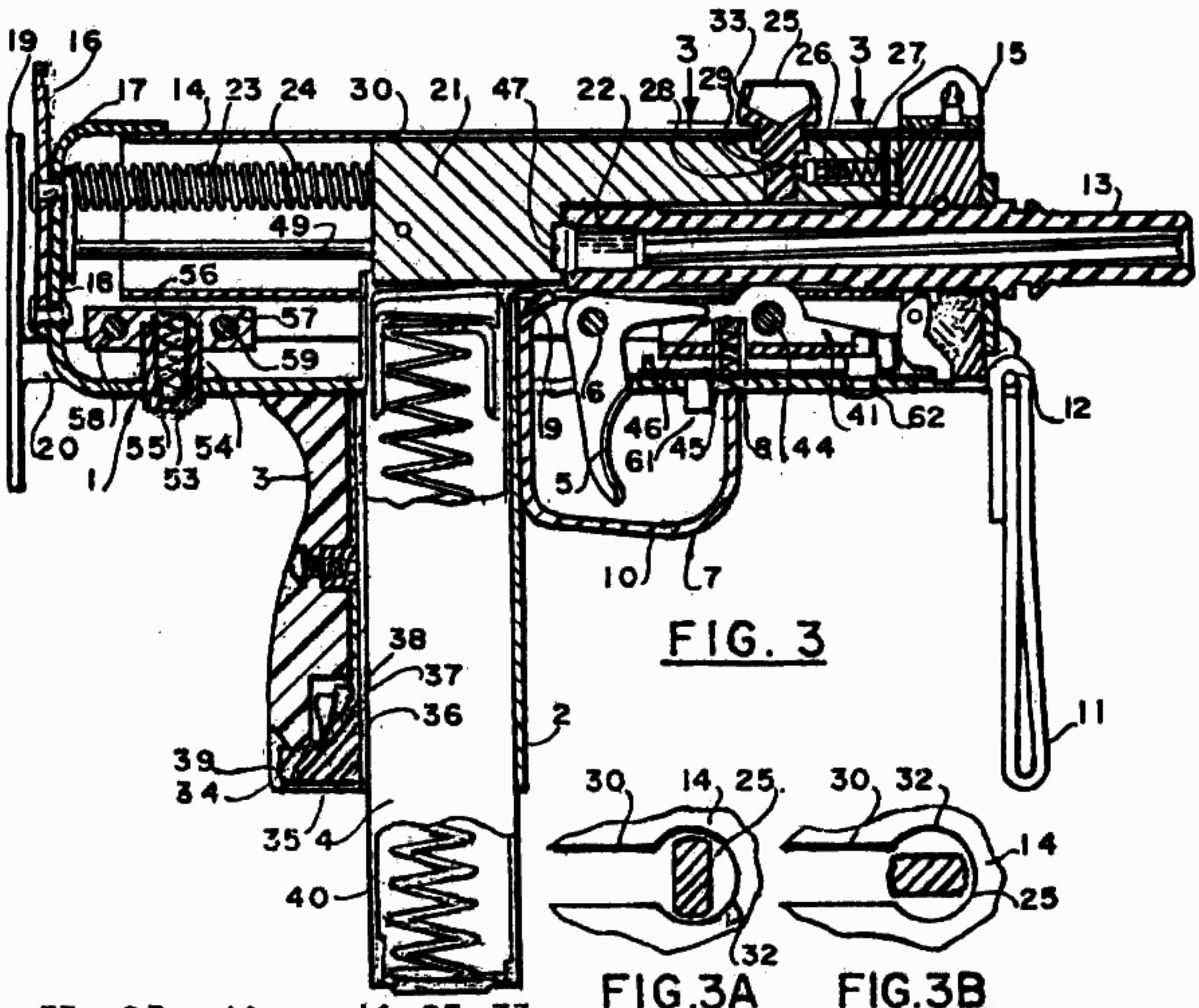

FIG. 3

FIG. 3A FIG. 3B

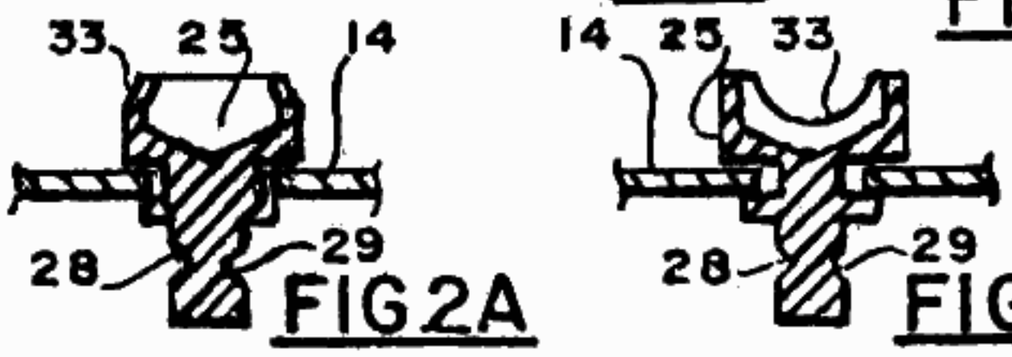

FIG 2A FIG 2B

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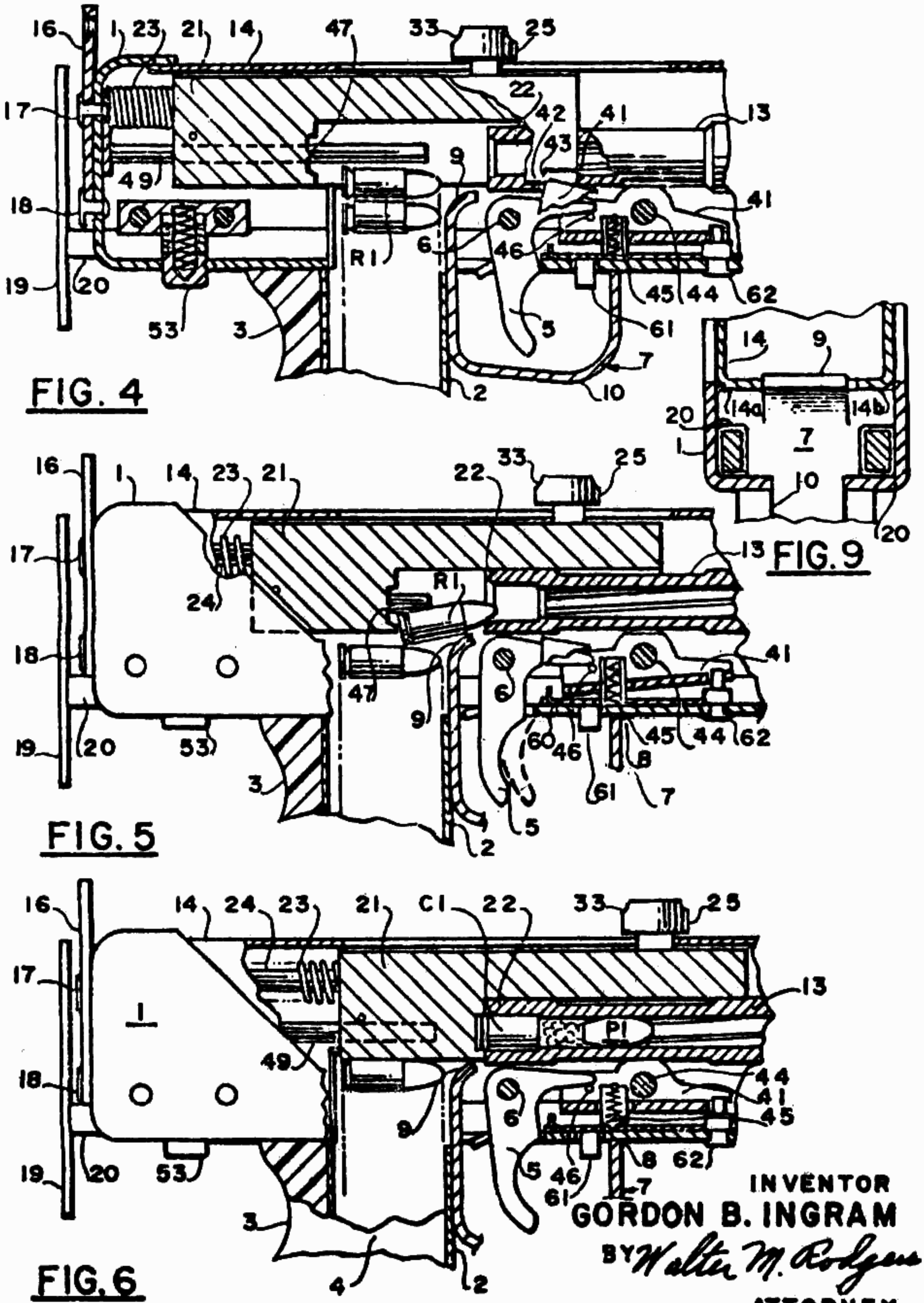

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United States Patent

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[15] **3,651,736**

[45] **Mar. 28, 1972**

[54] BOLT HANDLE AND PISTOL GRIP MAGAZINE FOR AN AUTOMATIC FIREARM

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[22] Filed: **June 11, 1969**

[21] Appl. No.: **832,083**

[52] U.S. Cl. .....89/132, 42/16, 89/1 K, 89/195

[51] Int. Cl. F41d 11/02

[58] Field of Search 42/7, 16.3, 72; 89/27.3, 136, 89/132, 180, 194, 195, 197

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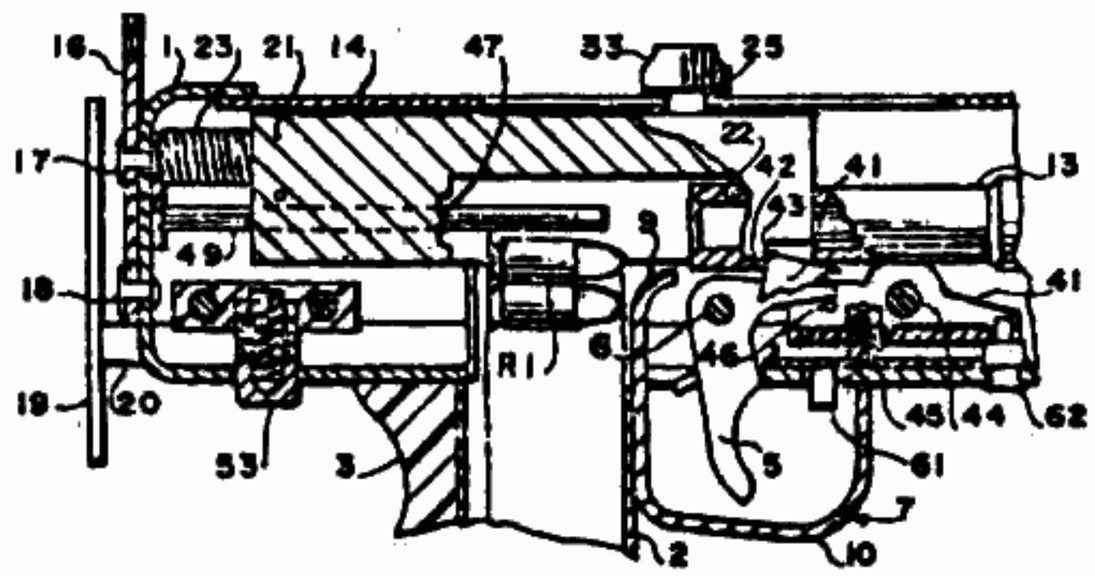
[57] **ABSTRACT**

An automatic firearm comprises a frame, a receiver mounted on the frame, a barrel mounted on the receiver, a bolt disposed in the receiver and telescopically movable relative to the breech end of the barrel against the action of a recoil spring, the bolt being controlled by a sear which is movable in response to movement of the weapon trigger. A trigger guard is mounted on the frame and disposed in enveloping relationship to the trigger and arranged with one end protruding inwardly of the frame and adjacent the breech end of the barrel so as to aid in guiding rounds of ammunition into the breech end of the barrel. A bolt handle is movably mounted on the bolt and arranged to extend through a longitudinal slot formed in the receiver. The bolt handle is constructed so as to form a locking relationship with enlarged ends of the longitudinal slot when moved relative to the bolt and a sight passage is formed in the outwardly protruding portion of the bolt handle which allows sighting therethrough in line with the front and rear sights when the bolt handle is in an unlocked condition but precluding sighting when the bolt handle is in locked position.

7 Claims, 13 Drawing Figures



U.S. Patent No. 3,651,736 was issued on March 28, 1972, to GORDON B. INGRAM. It covers the basic design of the Ingram M10 and M11 Submachine Guns formerly manufactured by the Military Armament Corporation of Marietta, Georgia.