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Mirzoev

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(54) **AUTOMATIC WEAPON SYSTEM**

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F41A 5/18 (2006.01)
F41A 5/34 (2006.01)

(52) **U.S. Cl.**
CPC ***F41A 3/88*** (2013.01); ***F41A 5/18*** (2013.01); ***F41A 5/34*** (2013.01)

(58) **Field of Classification Search**
CPC F41A 3/12; F41A 3/88; F41A 5/18; F41A 5/30; F41A 5/32; F41A 5/34
USPC 42/5, 14, 15, 16; 89/180
See application file for complete search history.

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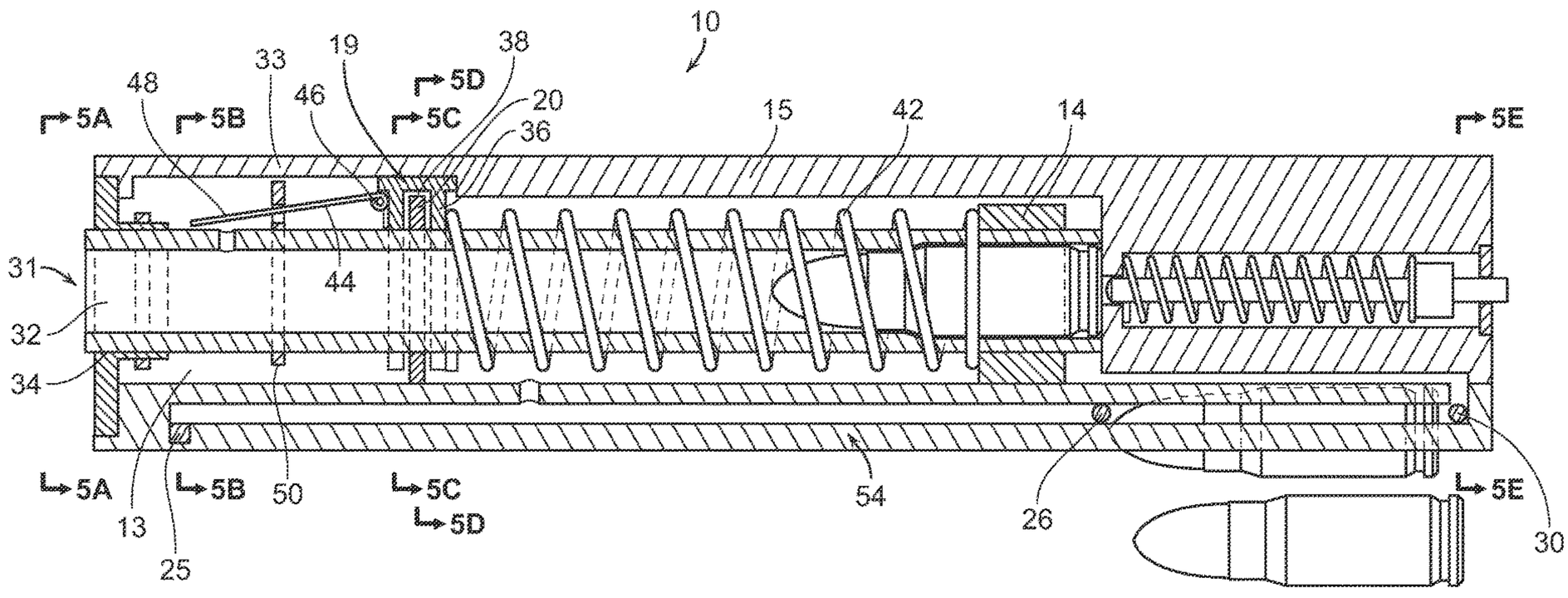
(57) **ABSTRACT**

An automatic weapon system including a gas evacuation opening formed in a bore of a barrel, a gas evacuation chamber, a barrel immobilizing device, a slide, a weapon frame with guides for guiding slide movement, a return spring mechanism of the slide and the breech. The gas evacuation chamber is disposed at a near-bore space located at the barrel bore outlet, a front wall of the chamber located at the barrel bore outlet is attached at the barrel outlet and having a lower part resting on a weapon frame. A rear wall of the chamber is formed by at least one bridge assembly having one end attached to the slide and another end sliding along the barrel, the bridge assembly is formed by a substantially flat plate having a groove extending from the barrel to the frame and sliding along the barrel, at least one sealing gasket. The frame of the weapon serves as the lower part of the evacuation chamber, the slide serves as upper and side walls of the chamber, a downwardly directed ledge provided at the front of the slide.

6 Claims, 6 Drawing Sheets



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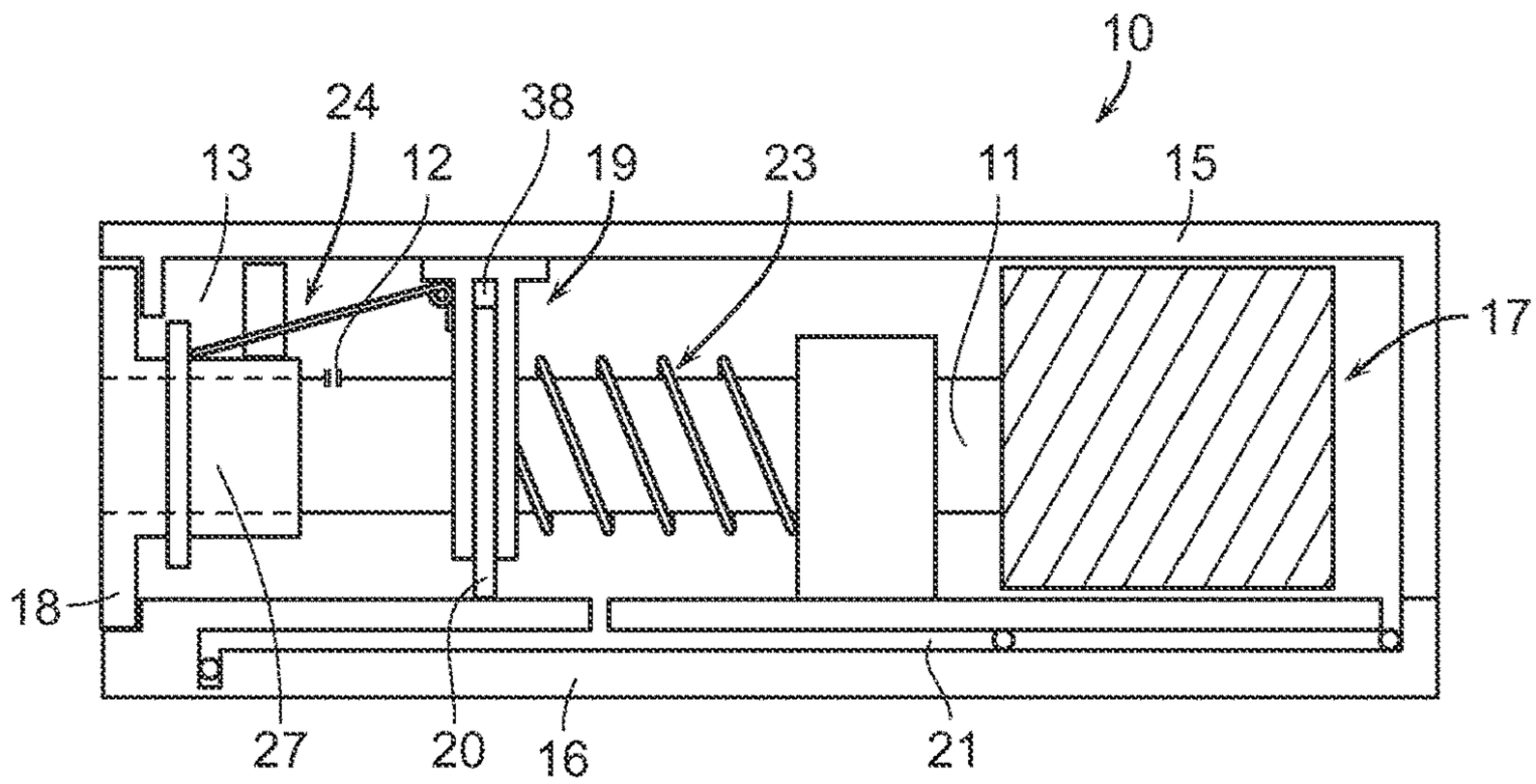


FIG. 1

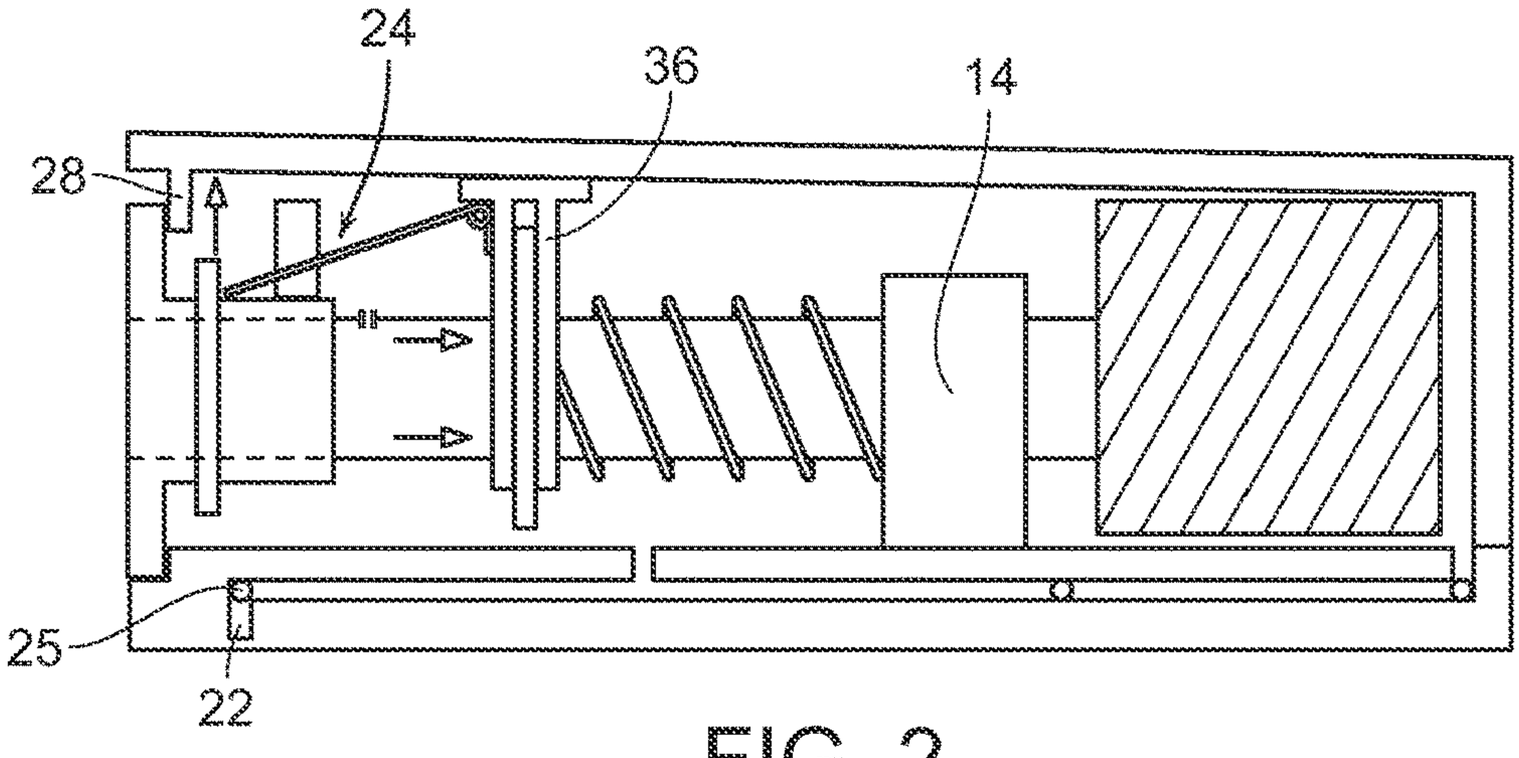


FIG. 2

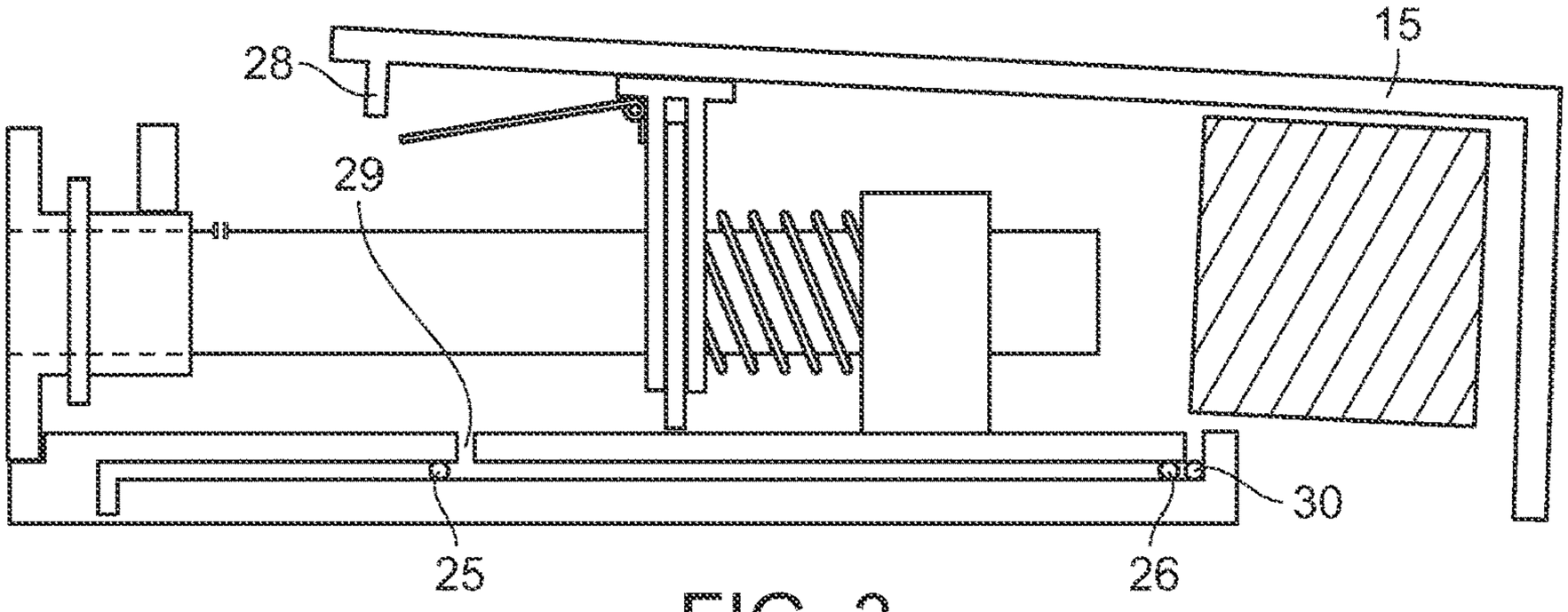
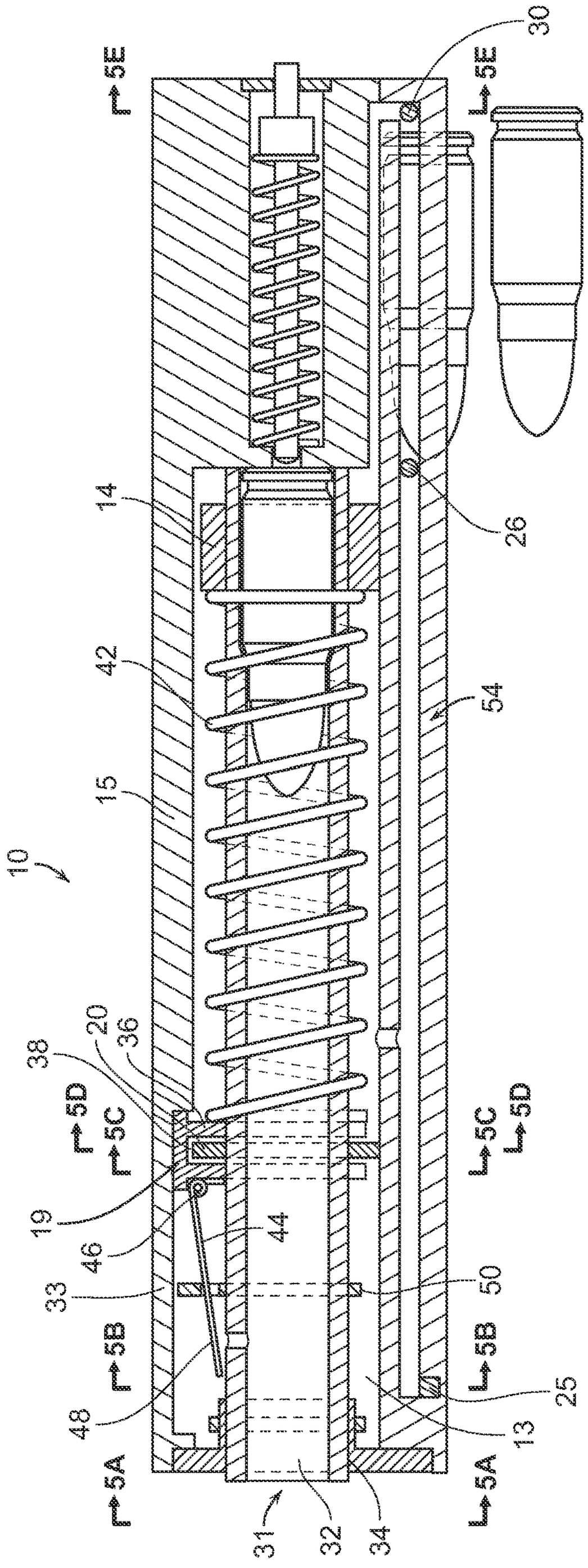


FIG. 3


30
5E
5E
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5D
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FIG. 4

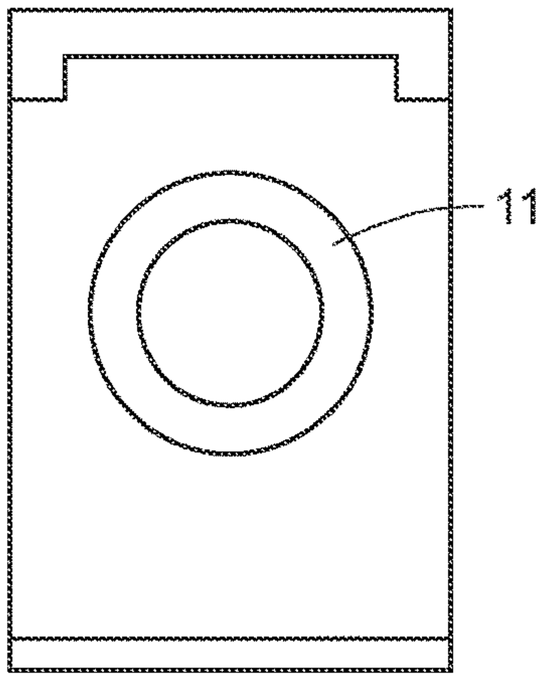

FIG. 5A

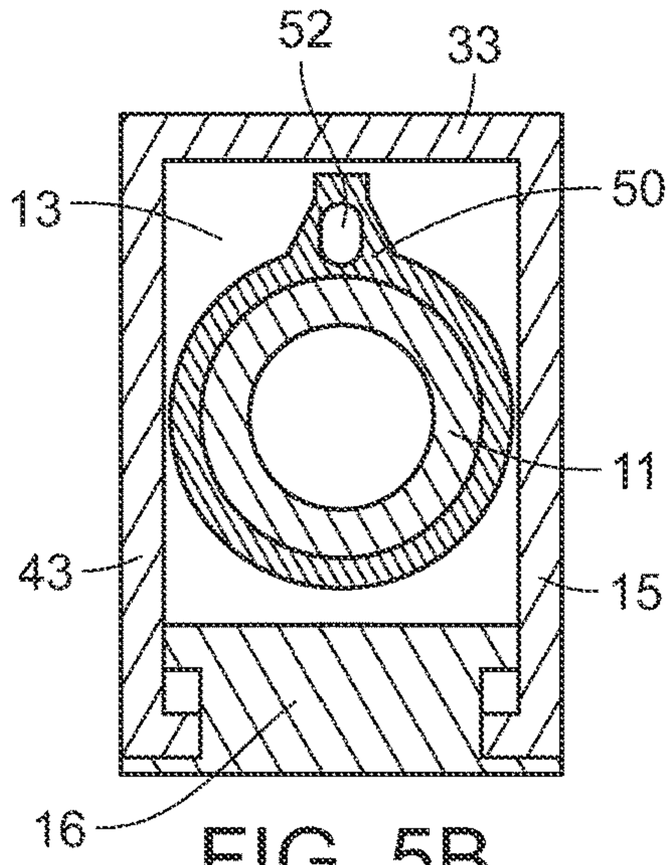

FIG. 5B

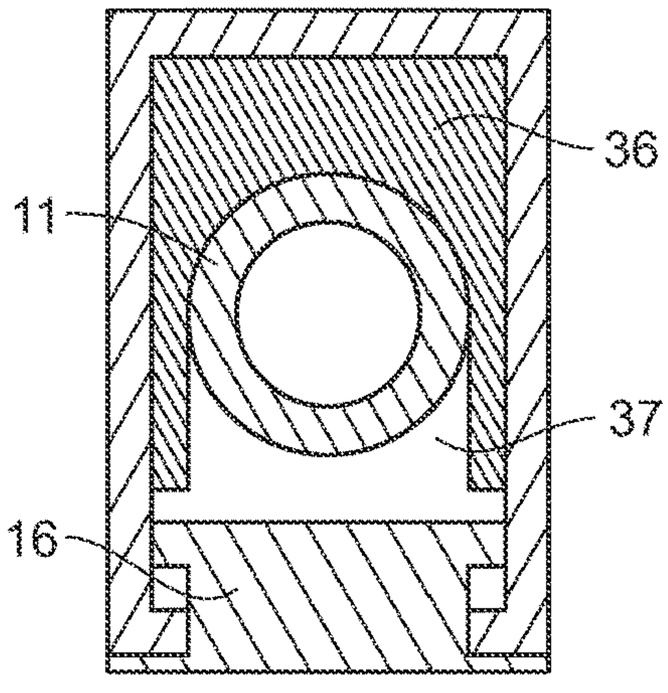

FIG. 5C

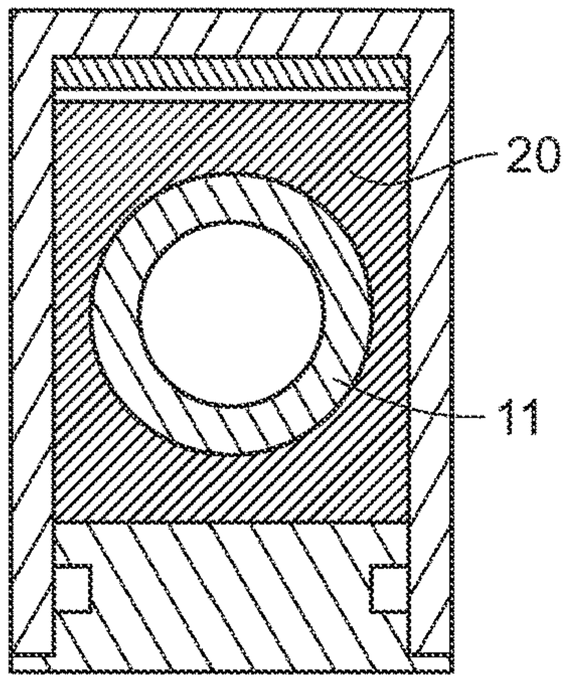

FIG. 5D

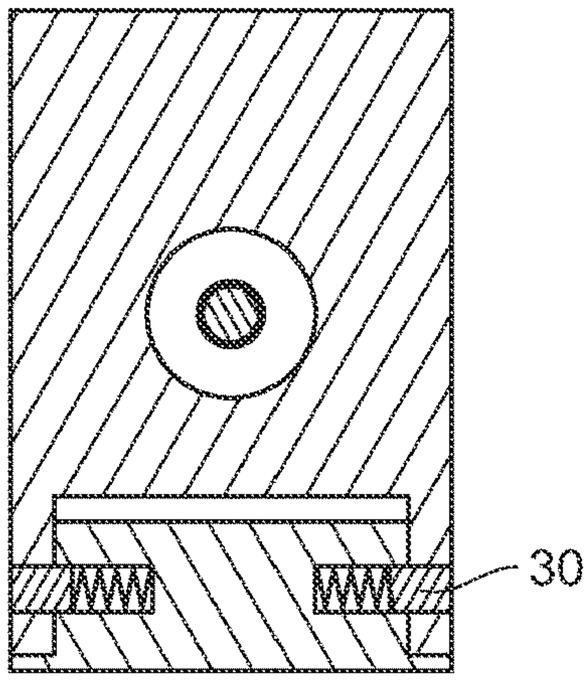

FIG. 5E

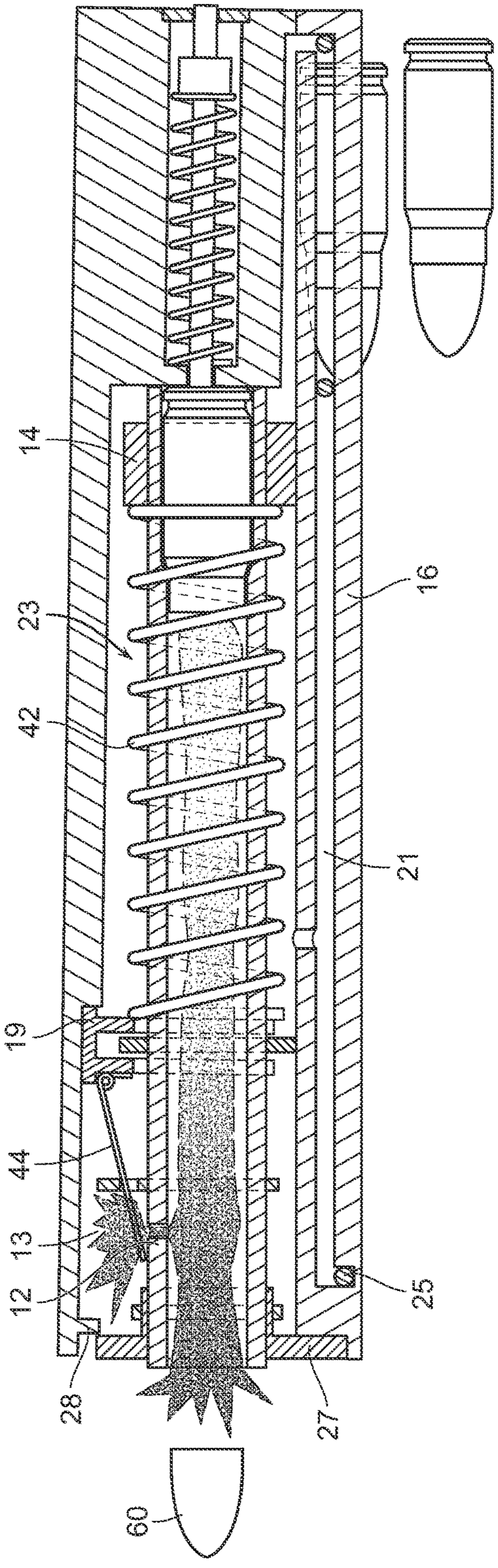

FIG. 6

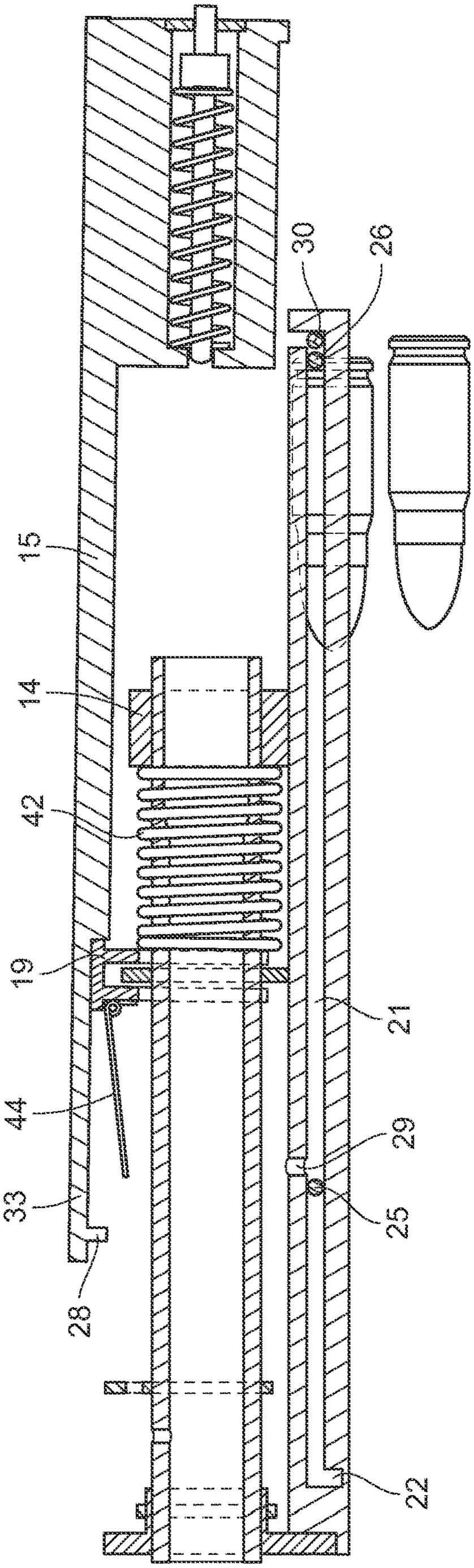

FIG. 7

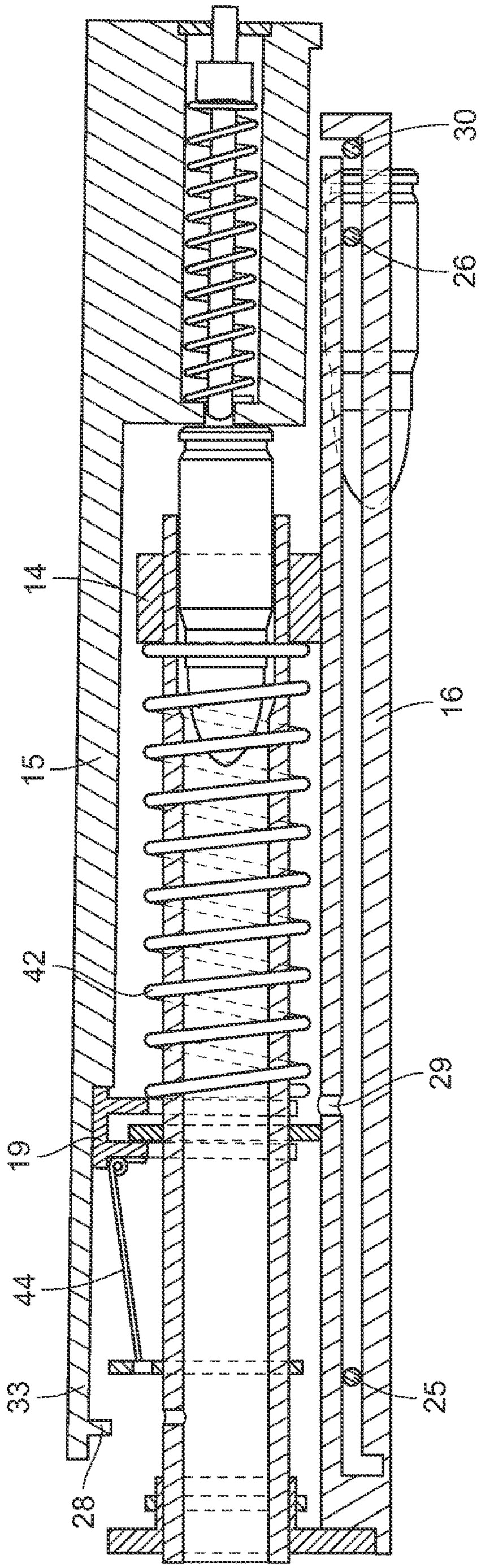

FIG. 8

AUTOMATIC WEAPON SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is continuation-in-part application of PCT Application PCT/RU2020/000112 having international filing date Mar. 2, 2020, claiming priority of Russian Patent Application S.N. 2019106869 filed Mar. 11, 2019 the disclosure of which applications is hereby incorporated by reference in their entirety.

FIELD OF THE INVENTION

The invention relates to the field of automatic weapon systems, and more specifically it relates to automatic weapons with the diversion of propellant gases for reloading through an opening in the barrel bore.

BACKGROUND OF THE INVENTION

Currently, there are known systems that use the energy of the propellant gases formed when firing to recharge. Consequently, the use of the diversion of part of the gas through the opening in the barrel, combined with the change in the structure of the slide and the gas chamber makes it possible to regulate the speed and impact force of a bullet, as well as the rate of fire.

Russian Federation Patent No. 2347169 issued to V. A. Kaminsky for Automatic pistol discloses automatic weapon—a pistol that contains a stationary barrel, a slide with a drummer and ejector, a frame, a spring-loaded gas engine with a gas piston and a gas chamber, a firing mechanism, and a magazine. An essential feature of this patent is that the stationary barrel is equipped with a shank located at the lower part of the breechblock, the slide is designed to ensure that its front part is skewed down in the extreme forward position. At the same time at the front of the slide from the sides are mounted combat protrusions, and their responsive combat stops are located in the grooves provided at the tail of the stationary barrel, the gas piston is made with a window for the ejection of the casing and the ability to disengage and move the slide back when moving backward, and when moving the slide forward and ensure that its front part is skewed downwards, while the gas chamber installed to coverage the muzzle of the stationary barrel having the gas outlet channels located along its circumference.

Russian Federation Patent No. 2464518 issued to Reshniak for Beaver submachine gun teaches automatic small arms, having the automation which is based on the principle of diverting propellant gases into a gas chamber, containing a barrel with a chamber, a gas outlet channel with a cylinder in which a piston is located; a barrel box rigidly fastened to the barrel, a frame with a slide, having a rigid fixation, a single and automatic trigger mechanism, a cartridge magazine made with the possibility of insertion into a pistol grip. An essential feature of this patent is that the barrel has a combined channel consisting of accelerating, combat and stabilizing parts, a reclusive-rig frame on which from the side of the slide members are provided locking the slide on the lugs along the axis from the outside of the slide and to move the slide in the receiver along the guides, and to rotate the slide along the axis when locking, with the possibility of using cartridges of different lengths and for reverse rotation when unlocking the slide, while the firing mechanism is made of a striker type, and double-row cartridge magazines are attached to the pistol grip shaft hatch.

Both the above discussed weapons utilize at the base of the automatic reloading system utilize a gas engine, including a closed gas chamber with piston and rod, this complicates the kinematic and constructive recharge scheme, and accordingly reduces the reliability of the product in operation and convenience of maintenance.

Another pertinent prior art know to the applicant also discloses an automatic weapon system. This weapon system uses the removal of part of the propellant gases from the barrel bore through a special hole in the barrel bore for powering the automatic gas engine, including a barrel with a through hole for gas outlet, a gas outlet chamber with a piston and a rod, a device for immobilizing the barrel, a slide, a weapon frame with guides of the slide movement, the return spring mechanism of the slide and the breechblock (see glushiteli-zvuka-vystrela-dlya-avtomaticheskogo-oruzhiya/49-1-4-mekhanizmy-avtomatiki-strelkovogo-oruzhiya). The disadvantages of this weapon system are in the large recoil force, a strong upward movement of the barrel and significant shock impulses, which lead to a decrease in firing accuracy. In addition, the complexity of the gas engine design leads to a decrease in reliability and service life.

SUMMARY OF THE INVENTION

As to one aspect of the invention the system is provided a gas evacuation chamber which opens at the shot to divert the gases. The chamber is formed within a near-barrel space located at the outlet of the of the barrel bore. A front wall of the chamber is disposed where the barrel bore outlet and has the bottom part which rests on the frame of the weapon. The opposite rear wall of the chamber is formed, by at least one bridge assembly having a top area attached to the slide. The bridge assembly includes at least one substantially flat plate with a groove extending from the slide to the frame and also including at least one sealing gasket sliding on the barrel. A unitary frame of the weapon serves as a bottom part of the chamber. Parts of the slide functioning as top and side walls of the chamber.

As to another aspect of the invention a slide return spring mechanism returns the slide to the original front position, and a special mechanism is provided for pressing the slide to the frame of the weapon.

As to still another aspect of the invention guides having channels are provided to coordinate movement of the slide backward and forward. The channels are formed on both sides of the weapon frame. Each channel at the barrel bore outlet is provided with downwardly directed ledge adapted to secure the slide in the front position. In order to fasten the slide on the frame of the weapon and to facilitate the direction of its movement, at the bottom of the side walls of the slide at its front region there are provided fixing lugs on the frame of the weapon in the form corresponding to the downwardly oriented ledge Sliding lugs having streamlined shape are disposed on at the of the breechblock region.

BRIEF DESCRIPTION OF THE DRAWINGS

The subject matter regarded as the invention is particularly pointed out and distinctly claimed in the concluding portion of the specification. The invention, however, may best be understood by reference to the following detailed description when read with the accompanying drawings in which:

FIG. **1** is a diagram of the system of the invention showing the initial slide position;

FIG. **2** is the diagram of the system of the invention at the time when shot is fired;

FIG. **3** is a diagram of the system of the invention with the slide in the retracted position;

FIG. **4** is a diagram showing the system of the invention showing the initial slide position in greater detail;

FIG. **5**A is a view according to section line **5**A-**5**A of FIG. **4**;

FIG. **5**B is a view according to section line **5**B-**5**B of FIG. **4**;

FIG. **5**C is a view according to section line **5**C-**5**C of FIG. **4**;

FIG. **5**D is a view according to section line **5**D-**5**D of FIG. **4**;

FIG. **5**E is a view according to section line **5**E-**5**E of FIG. **4**;

FIG. **6** is a diagram showing the system of the invention at the time when shot is fired in greater detail;

FIG. **7** is a diagram showing the system of the invention similar to that of FIG. **3** in greater detail; and

FIG. **8** is a diagram showing another position the system of the invention.

GENERAL DESCRIPTION OF THE INVENTED TECHNOLOGY

The terms "about" and "essentially" mean.+−.10 percent. The terms "a" or "an", as used herein, are defined as one. The term "plurality", as used herein, is defined as two or as more than two. The term "another", as used herein, is defined as at least a second or more. The terms "including" and/or "having", as used herein, are defined as comprising (i.e., open language). The term "coupled", as used herein, is defined as connected, although not necessarily directly, and not necessarily mechanically.

The term "comprising" is not intended to limit inventions to only claiming the present invention with such comprising language. Any invention using the term comprising could be separated into one or more claims using "consisting" or "consisting of" claim language and is so intended.

Reference throughout this document to "one embodiment", "certain embodiments", and "an embodiment" or similar terms means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, the appearances of such phrases or in various places throughout this specification are not necessarily all referring to the same embodiment. Furthermore, the particular features, structures, or characteristics may be combined in any suitable manner in one or more embodiments without limitation.

The term "or", as used herein, is to be interpreted as an inclusive or meaning any one or any combination.

As to general features of the system of the invention FIGS. **1-8** illustrate an exemplary firearm **10** that includes a barrel that is positioned within a slide. The slide houses a receiver that includes a firing pin assembly and is attached to one end of the barrel. The slide is mounted to a frame that may include a grip and a trigger assembly. In operation of the firearm system **10** the trigger assembly is pulled to cause the firing pin to fire the cartridge which is then propelled down the barrel by compressed gasses. The force of firearm causes the slide to retract to cock the firing pin and also induces the barrel to receive a new cartridge.

The slide is movably arranged on the frame in the longitudinal direction, that is, in the direction along the length of the barrel. The frame may serve to hold the mechanical parts of the firearm, such as the trigger housing and slide carrier group. The frame provides support for the control and guide movement elements for the slide.

The slide is the part of the weapon that moves during the operating cycle. A slide is a mechanical part of a firearm that blocks the rear of the chamber while the propellant burns, but moves out of the way to allow another cartridge or shell to be inserted in the chamber.

The slide cycles back and forward between each shot. When it moves back, an extractor pulls the spent casing from the chamber. When it moves forward, it strips a cartridge from the magazine and pushes it into the chamber. Once the cartridge case is clear of the chamber, the ejector kicks the case out of the weapon. The slide may be spring-loaded so that once it has moved to its rearmost position in the firing cycle, spring tension brings it back to the starting position chambering a fresh cartridge during the motion, provided that the magazine is not empty.

DETAILED DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

While this invention is susceptible to embodiment in many different forms, there is shown in the drawings and described in detail specific embodiments, with the understanding that the present disclosure of such embodiments is to be considered as an example of the principles and not intended to limit the invention to the specific embodiments shown and described. In the description below, like reference numerals, if any, are used to describe the same, similar, or corresponding parts in the several views of the drawings. This detailed description defines the meaning of the terms used herein and specifically describes embodiments in order for those skilled in the art to practice the invention.

Among essential elements of the system of the invention are as follows:

10—the system of the invention;
11—a barrel,
12—a through opening for evacuation of gases,
13—a gas evacuation chamber,
14—a device for immobilizing the barrel,
15—a slide,
16—a frame of the weapon,
17—a breechblock,
18—a wall of the chamber, located at the barrel bore exit,
19—a bridge assembly with a groove connected to the slide and sliding along the barrel,
20—a sealing gasket sliding along the barrel,
21—guides formed within side walls of the frame of the weapon,
22—a downwardly directed ledge of the guides,
23—a mechanism for returning the slide to the original, front position,
24—a mechanism for pressing the slide to the frame of the weapon,
25—lugs fixing the slide on the frame of the weapon,
26—lugs having streamlined configuration,
27 a fastening coupling,
28—a protrusion at the front of the slide, directed downwards, downwardly directed ledge at the front of the slide.
29—grooves extending upwardly from the guides facilitating disassembly of the slide.

30—a spring-loaded lugs for retaining the slide in operational/working mode and upon being pressed allowing removal of the slide.

The invention provides an automatic weapon system **10** utilizing removal or diversion of a part of the propellant gases through a gas evacuation opening **12** formed in the bore of the barre **11**. As illustrated in FIGS. **1-8** among essential elements of the firearm system **10** of the invention are: a barrel **11** having a bore **32** extending therethrough, a gas evacuation opening **12** formed in the bore **32** of the barrel, a gas evacuation chamber **13**, a device for immobilizing the barrel **14**, a slide **15**, a frame **16** and breechblock **17** of the weapon. The gas evacuation chamber **13** is located at the front outlet **31** region of the barrel and is separated from the surrounding space by walls.

A fastening coupling **27** having a front wall **18** is provided to facilitate connection of the barrel **11** to the frame **16** at the barrel bore outlet **31**. Downwardly directed ledge **28**, which can be in the form of a plate, is provided at an upper wall **33** of the front area of a slide **15**. An opening **34** is provided in a central part of the fastening coupling **27** to accommodate a front region of the barrel including the barrel bore outlet **31**. The coupling and the barrel are supported by the frame **16** of the weapon.

At the barrel outlet **31** a front part of the gas evacuation chamber **13** is formed by a front wall **18** of the fastening coupling **27**. In the illustrated embodiment a rear part of the chamber **13** is formed by a bridge assembly **19** consisting of two members **36** spaced from each other by a gap **38**. A sealing pad or gasket **20** tightly disposed within the gap **38** is provided for slidable motion along the barrel. A top part of the bridge assembly **19** is attached to an inner part of the upper wall **33** of the slide, whereas central and bottom parts of the bridge move or slide along the barrel **11**. As best illustrated in FIGS. **4**, **5**B and **5**C a solid frame **16** of the weapon serves as a lower part of the chamber **13**. Top and side walls of the chamber **13** are formed by the corresponding top **33** and side **43** walls of the slide **15**, which in cross-section have a U-shaped configuration.

As illustrated in FIGS. **1** and **4**, in the initial condition, the front wall **18** of the evacuation chamber **13** hermetically isolates a near-barrel space located at the barrel bore outlet **31** from outside environment. The front wall **18**, being a part of the coupling **17**, is formed with an opening **34** to accommodate the barrel outlet region **31**. A lower part of the front wall **18** rests in a recess provided at the front region of the weapon frame **16**. The integral frame **16** of the weapon serves as a bottom wall of the chamber **13**.

Tightness of a rear part of the evacuation chamber **13** facing the immobilizing device **14** is facilitated by the bridge assembly **19** having the sealing gasket **20** freely slidable along the barrel and extending to the frame **16** (see FIGS. **1**, **4** and **5**D). The bridge assembly **19** extends between the slide **15** and the frame **16** through operation of the system of the invention.

The members **36** of the bridge assembly **19** are typically in the form of substantially flat plates arranged parallel to each other and disposed transversely with respect to the top wall **33** of the slide. The members **36** are similar to each other, and each is formed with a groove **37** open from the bottom (see FIG. **5**C) and directed downwardly from the top level of the barrel **11** to the frame **16**. The open bottom of the groove **27** allows the slide **15** to be displaced in the upward direction during operation of the invention (see FIGS. **2**, **3**, **7** and **8**).

In the preferred embodiment the bridge assembly **9** consists of two members/plates **36** with a single sealing gasket **20** interposed within the gap **38**. The tight connection between the gasket **20** and the bridge members **36** is assured by a compression spring **42** of the return spring mechanism **23**.

In an embodiment in which the bridge assembly **9** is formed with multiple members/plates **36**, additional sealing gaskets are placed between each pair of the adjacent members. Such gaskets can be additional to the gasket facing the immobilizing device **14**. When the bridge assembly **19** is formed by a single member/plate **26**, a sealing gasket **20** can be attached to its surface facing the immobilizing device **14**.

The above-discussed bridge assembly **19** including the respective sealing gaskets **20** form a sealed wall that isolates the rear part of the gas evacuation chamber **13** facing the immobilizing device **14**.

In the evacuation chamber **13** within the wall of the barrel bore **32** facing an upper wall **33** of the slide the through gas evacuation opening **12** is provided to evacuate a part of the propellant gases. As best illustrated in FIG. **6**, such evacuation occurs after the bullet passes through an area of the barrel bore area having the opening **12**. The position and diameter of the gas evacuation opening **12** can affect the delay and force of the slide rollback, and also affects the characteristics of the accuracy of the shooting, the power of the bullet and the force of recoil.

It will be discussed later in the application that when the propellant gases are ejected through the gas evacuation opening **12**, an excess pressure is created in the chamber **13**, causing depressurization of the chamber along the boundaries of contact of the chamber walls. This occurs while the slide **15** is displaced up and back, as illustrated in at least FIGS. **2** and **6**.

To return the slide **15** to its initial position after a shot is fired, the return mechanism **23** is provided, which is located between the immobilizing device **14** and the bridge assembly **19**. The mechanism **23** is typically consists of a helical compression return spring **42** which is located under the slide **15** surrounding the barrel **11** in the space between the device **14** and the bridge assembly **19** having the sealing gaskets **20**.

Although in the illustrated embodiment the mechanism **23** is illustrated with a single spring **42**. In an alternate embodiment, the return mechanism **23** can be in the form of at least two helical compression springs, which are fixed along the axis of the barrel in the space between the barrel immobilizing device **14** and the bridge assembly **19**. These springs can be placed within suitable guides, for example in special grooves in the frame or in guides of the frame.

The slide **15** is pressed against the weapon frame **16** utilizing a mechanism **24**. The mechanism **24** consists of at least one bending spring **44** fixed at a proximal end **46** to the area of attachment of the bridge **19** to the slide **15**. A distal end **48** is movably connected or mated within a support **50** located along the barrel having a guide groove or channel **52** (see at least FIGS. **4**, **5**B,**6**).

The spring **44** is movably retained within the guide channel or groove **52** throughout the combat stroke of the slide (see FIGS. **1**, **2**, **4** and **6**). Various designs of the guide channel or groove **52** are within the scope of the invention. Although FIGS. **1**, **4**, **5**B show the mechanism **24** having the single spring **44**, use of multiple bending springs symmetrically located relative to the barrel **11** to provide proper pressure on the slide is also contemplated.

As to an alternate embodiment, it is also possible to press the slide **15** to the weapon frame **16** by means of at least one helical tension spring attached at one end on the upper part of the slide or to the upper part of the bridge **19**, whereas the

other end is attached the barrel **11** or frame **16** of the weapon in the area of the barrel bore outlet.

Another alternate embodiment of the pressing mechanism **24** may include two helical tension springs located on opposite sides of the barrel and fixed to the barrel or frame of the weapon in the area of the exit of the barrel bore. The other side is fixed to the upper part of the slide in the area adjacent to the bridge attachment to the slide. Leaf springs located in the channels above the lugs can also be used as a pressing mechanism.

A downwardly directed protrusion **28**, which can be in the form of a plate, is positioned at the upper wall **33** at the front part of the slide **15**. The protrusion **28** provides a delay in the release of pressure in the chamber **13**. By changing the width of the protrusion **28**, it is possible to regulate the beginning of the slide rollback and other essential characteristics of the invention. Typically, the width of the protrusion **28** is greater than the height of the fixation lugs and typically is within the range 4-16 mm.

The guides **54** having channels **21** are provided to coordinate movement of the slide **15** backward and forward. The channels **21** are formed on both sides of the weapon frame **16**, with their length corresponding to the backward movement of the slide. Extension of the channels **21** can be provided for removing the slide **15** during disassembly of the weapon. The guide channels **21** are typically in the form of grooves open on one side facing exterior of the frame. The cross-sectional shape of the channels varies, but typically it has a rectangular configuration. In each guide channel **21** at the barrel bore outlet region **31**, a downwardly directed ledge **22** is formed. At the bottom of the side walls of the slide at its front region, lugs **25** are provided configured to match the shape of the corresponding ledges **22** in the channels **21**. This arrangement assures a reliable fixation of the corresponding lugs **25** provided on the slide. The ledges **22** are directed downwardly relative to the horizontal orientation of the slide on the frame.

Sliding lugs **26** having streamlined shape are disposed at the of the breechblock **17** region. An essential function of the lugs is to fasten the slide on the frame **16** of the weapon and to facilitate the direction of its movement.

The front lugs **25** are provided for fixing the slide and prevent displacement in the initial state of the weapon's operation. The height/lengths of the lugs are preferably between 2 to 6 mm. The transverse fixation of the slide is provided by the pressure mechanism **24** and the frame **16** of the weapon as described above.

An essential function of the front lugs **25** is to retain the slide **15** within the frame of the weapon. In the area of the breechblock **17** streamlined lugs **26** are situated. The lugs are formed to correspond to the configuration of the channels **21** and the ledge **22** and to accommodate the direction of the slide **15** movement at the bottom of the frame side walls.

The rear lugs **26** serve as guides for movement within the channels. The streamlined shape of the lugs **26** facilitates a rotational moment of the slide **15** around an axis of rotation passing through these lugs. In other words, during the rotation lugs **26** allow the front of the slide **15** to be lifted up as shown in FIGS. **2**,**3** and **6**-**8**. When a shot is fired, an excess pressure is created in the chamber **13** by the gases released through the evacuation opening **12** acting on the upper wall **33** of the slide. As a result, the front lugs **15** are pushed out of the ledges **12** provided in the channels, and the slide **15** moves in the up and backward directions, as shown in FIGS. **2**,**3**, **7** and **8**.

Removal of the slide **15** from the frame is carried out by pressing on a spring-loaded lug **30** limiting the active movement of the slide. Then the slide **15** is manually moved further than its active movement and rests on the end part of the guiding channels. Then by movement through the ledge **12** extending upwardly from the channels until the exit from the weapon frame is reached and combined with the position of the grooves of the channels of the slide, the slide is detached from the frame.

The system **10** of the invention operates in the following manner, as illustrated in FIGS. **1** and **4**, in the initial position the slide **15** is disposed at the barrel bore outlet region **31** and the spring **42** of the return mechanism **23** is not deformed. As best illustrated in FIGS. **2** and **6**, when fired a bullet **50** passes through the barrel bore **32** beyond the gas evacuation opening **12**, and the gases are released through this opening into the space of the gas evacuation chamber **13**. The pressure in the chamber **13** increases, and the front region of the slide **15** moves upwardly. As a result, the lugs **25** come out of the engagement with the ledges **22** provided to retain the slide **15** in the forward position (see FIG. **7** for example). When the lugs **25** disengage the ledges **22**, due to the pressure of the gases in the still sealed gas evacuation chamber **13** (see FIGS. **2** and **6**), the slide **15** moves up. As pressure increases, the front wall **33** of the slide is placed in the raised upward position, and the gas evacuation chamber **13** is unsealed. By inertia the slide **15** moves in the backward direction and reaches the spring-loaded lugs **30** (see FIG. **3**) that limit the slide movement.

The movement of the front part of the slide **15** upward is facilitated by a streamlined shape of the lugs **26** located at the breechblock **17** area. When the chamber **13** is opened the inside pressure drops to atmospheric and the slide, after stopping in the rear position, returns back, as illustrated in FIG. **8**.

In the movement of the slide **15**, the action of the pressuring mechanism **24** assures that the slide is pressed against the frame. During the movement of the slide back, in its final stage, a cartridge case is ejected. Upon movement to the initial position, the cartridge is directed into the cartridge chamber (see FIGS. **7** and **8**) Thus, when the slide **15** returns to its initial position, the system is again ready to fire.

When the gases through the gas evacuation opening **12** enter the space of evacuation chamber **3**. Due to the action of gases on the slide **5**, the front part of the slide at the wall **33** rises up. As to the guiding channels **21**, the front lugs **25** come out of the engagement with the fixing ledge **22**, and the slide is disengaged from the frame and rolled back. Simultaneously the front part of the slide **15** is raised by approximately 4-16 mm. When the slide **15** returns to its initial state, the weapon is reloaded, and it is ready to fire again.

As illustrated in FIGS. **3** and **7**, during the shooting, the spring **42** under the action of the backwardly moving slide **15** is compressed, and after the shot it returns the slide forward to its original position as shown in FIG. **1**.

To carry out the disassembly of the system of the invention, the extension of the channels beyond of the length of the action is used for its removal. Removal of the slide **15** is carried out by pressing inwardly the spring-loaded lugs **30**, limiting the movement of the slide. As a result, the slide is manually moved further than the combat stroke and rests against the end of the guiding channels. Then it moves along the grooves passing from the channels vertically upward to the exit from the weapon frame **16** and to be aligned with the position of the guide groves **29**. As a result, the slide is separated from the frame **16** of the weapon.

It has been discussed above that among the essential features of the system of the invention are the following components.

The automatic weapon system **10** of the invention includes the mechanism **23** for returning the slide **15** to the original, front position comprising the compression spring **42** surrounding the barrel and located between the device **14** for immobilizing the barrel and the bridge assembly **19** sliding on the barrel and provided with the sealing gasket **20**.

An alternate embodiment of the automatic weapon system **10** of the invention includes the mechanism for returning the slide to the original front position comprising at least two compression springs, disposed along the axis of the barrel in the space between the device **14** for immobilizing the barrel and sliding on the barrel bridge assembly **19**.

The automatic weapon system **10** also includes the mechanism **24** for pressing the slide to the frame **16** of the weapon which is formed by at least one bending spring **44** having one end connected to the area of attaching the bridge **19** to the slide, whereas the other end is movably disposed with the guide channel **52** provided in a support **50** placed along the barrel.

In a more specific embodiment the mechanism **24** of pressing the slide **15** to the frame **16** is in the form of at least one stretching spring attached at its top end to the area of the attachment of the bridge to the slide, whereas the other lower end of the spring is connected to the barrel or the frame of the weapon at the area of the barrel outlet.

The automatic weapon system **10** of the invention includes the bridge sliding on the barrel consisting of at least two substantially flat plates, each having a groove extending from the barrel to the frame, having the sealing pads disposed in the respective gaps.

What is claimed is:

1. An automatic weapon system utilizing evacuation of a part of propellant gases from a barrel bore through a gas evacuation opening formed in a bore of a barrel comprising:

a gas evacuation opening formed in a bore of a barrel for evacuation of propellant gases, a gas diverting/evacuation chamber, a barrel immobilizing device, a slide, a weapon frame with guides for guiding slide movement, a return spring mechanism of the slide and a breech,

wherein the gas diverting/evacuation chamber is disposed at a near-bore space located at a barrel bore outlet, a front wall of the diverting/evacuation chamber located at the barrel bore outlet is attached at the barrel outlet and having a lower part resting on a weapon frame, an opposite rear wall of the diverting/evacuation chamber is formed by at least one bridge assembly having one end attached to the slide and another end sliding along the barrel, the bridge assembly formed by at least one substantially flat plate having an inner groove extending from the barrel to the frame and sliding along the barrel, the bridge assembly having at least one sealing gasket, the frame of the weapon serves as a lower part of the diverting/evacuation chamber,

the slide serves as upper and side walls of the chamber, a downwardly directed projection provided at a front of the slide,

the return spring mechanism of the slide for returning the slide to an original, forward position and a mechanism for pressing the slide to the frame,

channels formed inside walls of the weapon frame functioning as guides for moving the slide in a backward direction, a downwardly directed ledge at each said channel at the barrel bore outlet to retain the slide in a front position,

whereby, fixation lugs are provided at a bottom of a front area of the side walls for connecting the slide to the frame and to coordinate direction of a respective movement, said fixation lugs having a shape corresponding to a shape of the downwardly directed ledge formed in the channels, and streamlined sliding lugs are provided at a breech region,

whereby in an initial, forward position of the slide, connections between the walls of the gas diverting/evacuation chamber are sealed, and when a bullet passes through the barrel bore at the gas evacuation opening formed in the bore of the barrel, the walls of the chamber are unsealed so to open the chamber.

2. The automatic weapon system according to claim **1**, wherein the return spring mechanism for returning the slide to the original, forward position is a coil compression spring surrounding the barrel, said spring is located between the barrel immobilizing device and the bridge assembly having the sealing gasket sliding along the barrel.

3. The automatic weapon system according to claim **1**, wherein the return spring mechanism for returning the slide to the original forward position includes at least two helical compression springs provided along an axis of the barrel in the space between the immobilizing device and the bridge assembly with the sealing gasket sliding along the barrel.

4. The automatic weapon system according to claim **1**, wherein the mechanism for pressing the slide to the weapon frame comprises least one bending spring having one end positioned in an area of attachment of the bridge assembly to the slide, and having another end of the bending spring being movably disposed in a guide groove provided along the barrel.

5. The automatic weapon system according to claim **1**, wherein the mechanism for pressing the slide to the weapon frame comprises at least one helical tension spring positioned at one end in the region of the attachment of the bridge assembly to the slide, and at the other end disposed a lower level on the barrel or the frame at the bore outlet.

6. The automatic weapon system according to claim **1**, wherein said at least one substantially flat plate of the bridge assembly comprises at least two substantially flat plates separated by a gap with a groove from the barrel to the frame, and having said at least one sealing gasket located within the gap.

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