C. L. H. PRINKE.

AUTOMATIC FIREARM.

APPLICATION FILED APR. 27, 1908.

904,646. **Patented Nov. 24, 1908.**

2 SHEETS—SHEET 1.

Fig. 1.

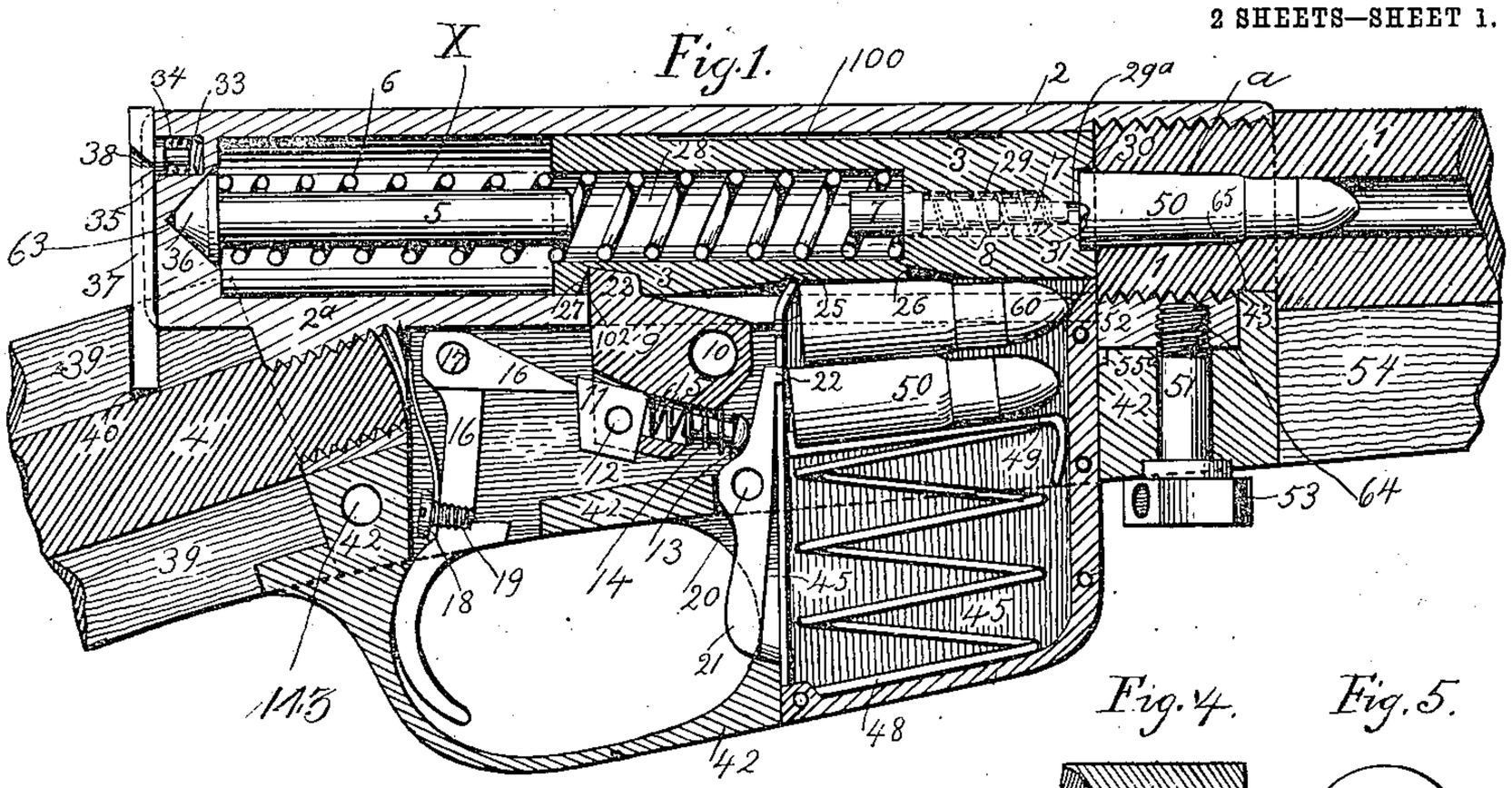

Fig. 2.

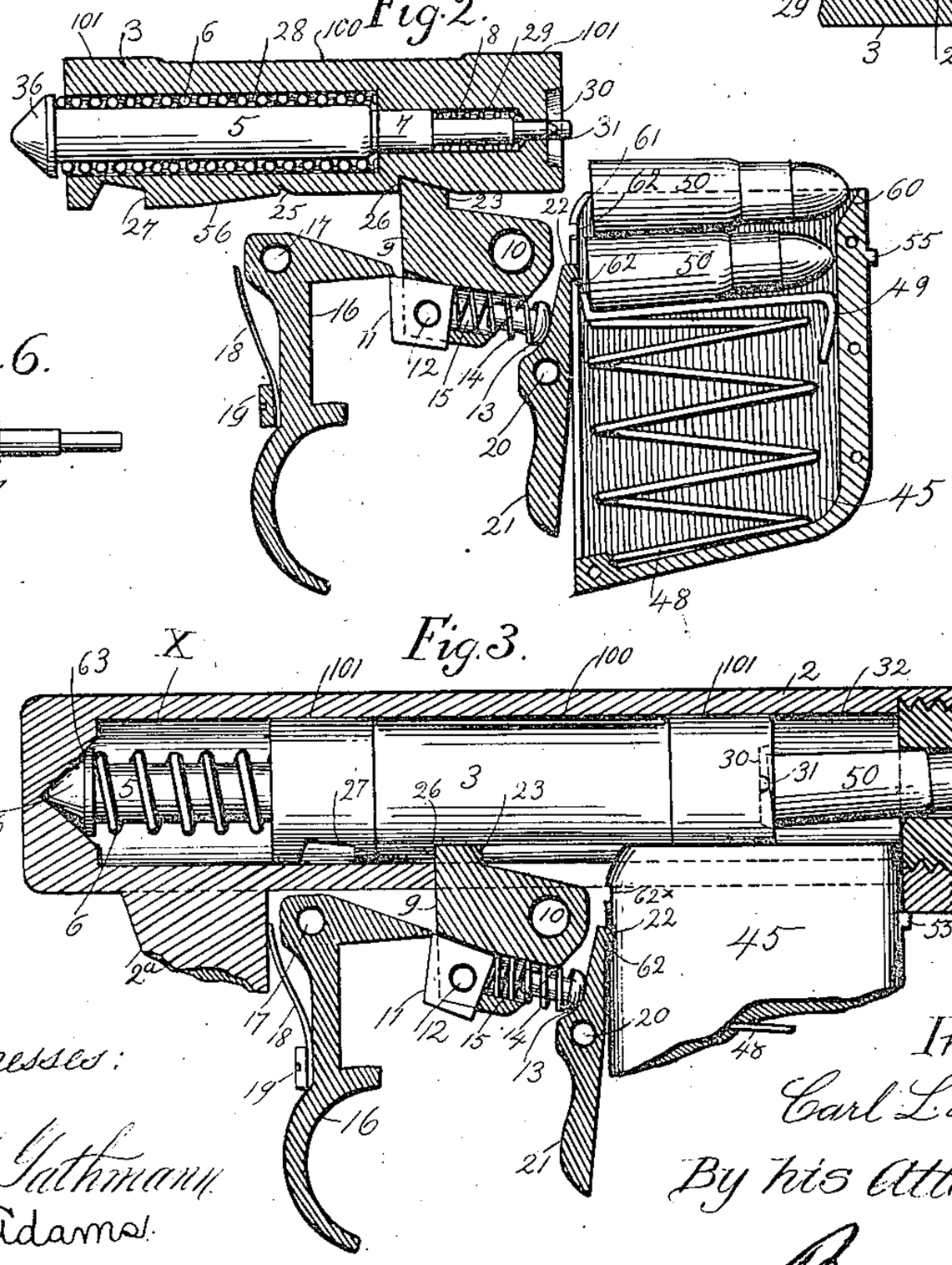

Fig. 4.

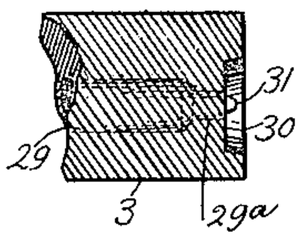

Fig. 5.

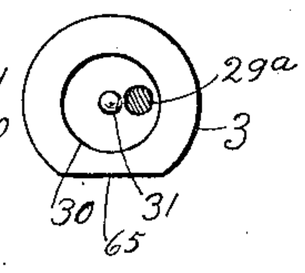

Fig. 7.

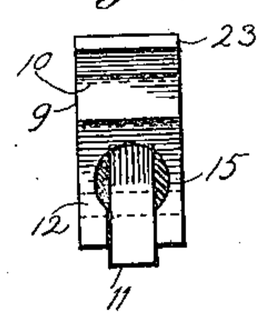

Fig. 6.

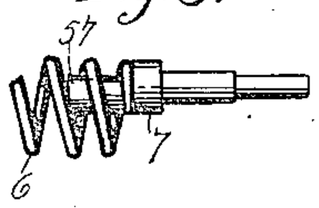

Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 8.

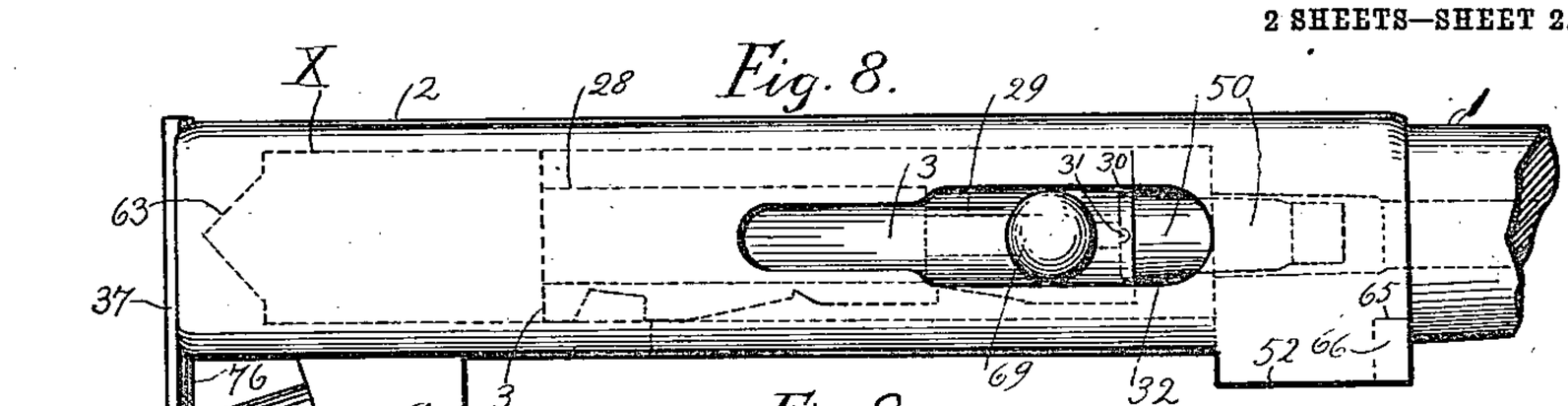


Fig. 9

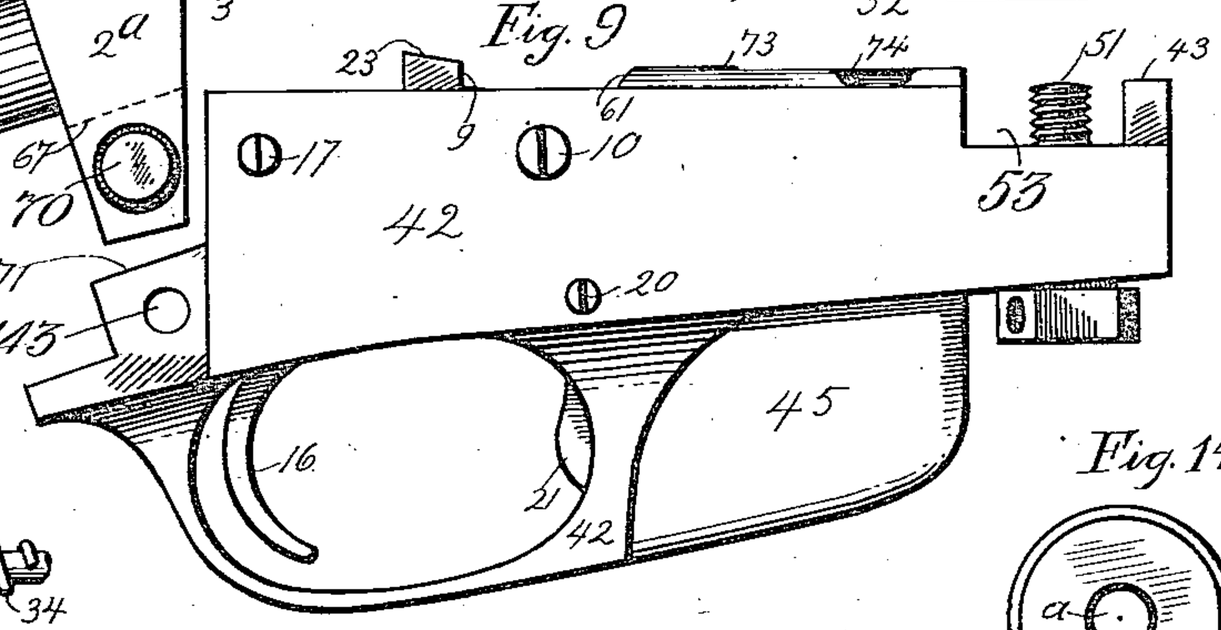


Fig. 12.

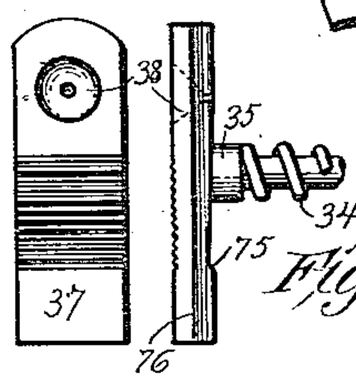


Fig. 13.

Fig. 14.

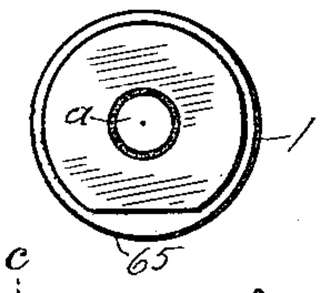


Fig. 10

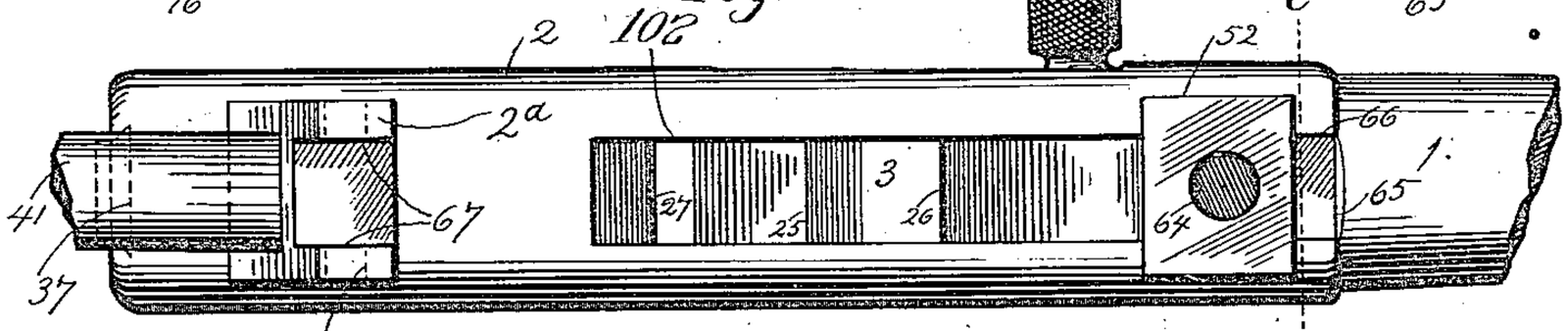


Fig. 11

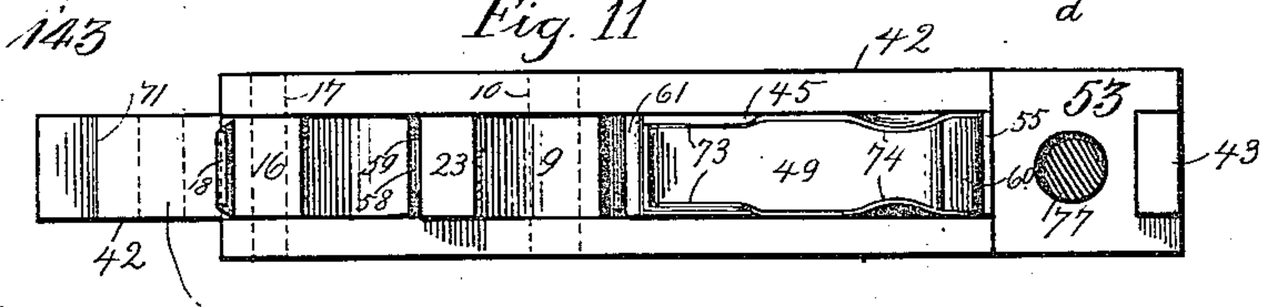


Fig. 15

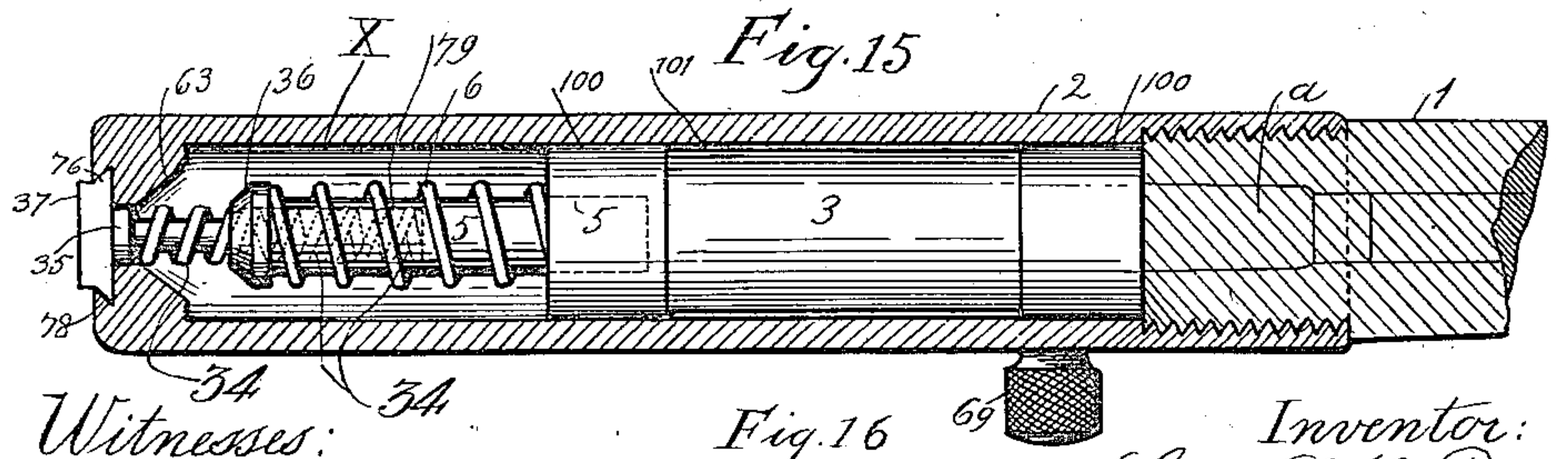
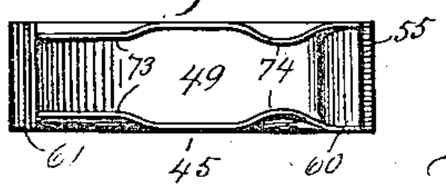


Fig. 16



Witnesses:

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AUTOMATIC FIREARM.

No. 904,646. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed April 27, 1908. Serial No. 429,363.

To all whom it may concern:

Be it known that I, CARL L. H. PRINKE, a subject of the Emperor of Germany, residing in the city of Baltimore and State of Maryland, United States of America, have invented certain new and useful Improvements in Automatic Firearms, of which the following is a specification.

This invention relates particularly to that class of firearms in which the force of the expanding gases developed immediately after firing is employed to open the breech, extract and eject the shell, cock the arm and permit the feed of a fresh cartridge. In such arms a fresh load is usually inserted by the breech bolt which immediately moves forward after recoil and the cartridge is exploded by a firing pin carried by the breech bolt. A firearm of this class is shown in my U. S. Patent No. 875,209 of December 31, 1907, and my present invention involves certain improvements on this arm, and it also involves some radically new features of construction and operation which will be hereinafter fully explained.

According to my present invention the breech bolt, or as I call it, the firing bolt, is pressed forward by a spring and carries a rigid or integral firing pin. No extractor is employed and the ejector, while carried by, is movable independently of the firing bolt which latter, at the instant of firing, is engaged by the sear in such manner as to resist the recoil, thus holding the breech closed until the accumulated power of the gases of explosion is such as to not only forcibly expel the bullet, but to insure the proper recoil of the bolt. I have also provided a pneumatic check for the recoil which may be used in connection with the check afforded by the engagement of the sear with the bolt, as above explained, or it may be used independently thereof for a similar purpose.

The trigger and cocking mechanism differ materially from that shown in my prior patent and the cartridge box or magazine is also improved and novel devices are employed for holding the magazine in feeding position.

The improved arm is so constructed that the shock of recoil is mainly conveyed directly from the receiver to the stock of the arm instead of to the stock by way of the frame as heretofore and the assembling devices have also been changed. I have also provided novel means for holding and guiding the action spring and connecting it with the ejector, and a new way of mounting and operating the rear sight has been added.

In the accompanying drawings,—Figure 1 shows a vertical longitudinal section of the breech portion of an automatic firearm embodying my improvements, some of the interior parts being shown in elevation and these parts are shown in the position they assume at the instant of firing. Fig. 2 is a similar view of the main working parts of the arm in firing position. Fig. 3 shows a vertical longitudinal section with some parts in elevation of a modified form of the mechanism where the firing bolt, which is in firing position, is held closer to the breech of the barrel and has partially inserted a cartridge in the cartridge chamber of the barrel. Fig. 4 shows a vertical longitudinal section of the front end of the firing bolt. Fig. 5 shows a front elevation of the same. Fig. 6 is a plan view of the ejector and the front end of the action spring with which it is connected. Fig. 7 is a rear view of the sear and the pawl which it carries. Fig. 8 shows a side elevation of the receiver and certain parts connected therewith. Fig. 9 shows a side elevation of the frame, trigger guard, magazine, etc. Fig. 10 is a bottom plan view of the receiver and certain parts carried thereby. Fig. 11 is a top plan view of the frame and certain parts connected therewith. Figs. 12 and 13 are detail views of the rear sight of the barrel. Fig. 14 shows a transverse section on the line *c*—*d* of Fig. 10. Fig. 15 shows a vertical longitudinal section of the receiver with a modified form of action spring and guide. Fig. 16 is a plan view of the cartridge box or magazine.

The tubular receiver 2 is connected with the barrel 1 by a threaded joint and is provided with a threaded socket 64 to receive the assembling screw 51 which passes through a hole 77 in the front part of the frame. The frame 42 has a recess 53 to receive the boss 52 in which the socket 64 is located, and it has a lug 43 formed with a flat top and it enters a recess 66 formed in the front portion of the receiver in front of

the boss 52. The barrel has a flattened part 65 in the front part of its threaded portion with which the top of the lug 43 engages when the parts are locked together.

The parts are secured together by means of the assembling screw 51, in the manner indicated, *i. e.*, the assembling screw enters vertically through the front part of the frame and engages the socket 64 of the receiver. When the parts are thus assembled the top of the lug 43 bears against the flat portion 65 of the barrel and prevents it from turning, and the lug 43 is held tightly in the recess or socket 66. In my prior patent the lug 43 was received in a recess formed in the forearm 54, while I now form the lug-receiving recess or socket in the front part of the receiver.

Instead of connecting the shank 41 of the butt stock with the frame, I now connect it directly with the receiver so that the shock of recoil may be transferred directly from the receiver to the stock instead of by way of the frame as heretofore. For this purpose the receiver is formed with a downwardly projecting arm 2^a into which the shank 41 is screwed, as indicated in Figs. 1 and 8. This arm 2^a is bifurcated, as indicated in Fig. 10, and the two members 67 fit over a tongue 71 at the rear end of the frame 42. The two members of the bifurcated portion of the arm 2^a, are formed with threaded holes and the tongue 71 is formed with a registering unthreaded hole 143. When the parts are brought together they are held firmly in place by an assembling screw 70. In this way the receiver is connected to the frame by assembling screws both at the front and at the rear, but the shock of recoil is mainly transferred from the receiver directly to the butt stock. The barrel may be detached from the receiver when they are disconnected from the frame by merely loosening the assembling screw 51, and when the barrel is removed the front end of the receiver is freely opened so that the firing bolt and other working parts associated therewith can be removed through the front of the receiver, thus enabling me to have a solid or integral rear end for the receiver.

The breech bolt, or as I call it, the firing bolt, 3, is mounted to slide back and forth in the receiver in line with the barrel and it carries at its front end a fixed firing point or pin 31, which is centrally arranged, as shown in Fig. 5. The firing bolt is hollow, being formed with three chambers 28, 29 and 29^a of different diameters, the chamber 29^a being made to extend through the front end of the bolt which latter is recessed at 30, and this chamber 29^a is eccentrically located as shown in Fig. 5.

The action spring or firing spring 6 has its front end arranged in the rear chamber 28 of the firing bolt and it extends back to the rear end of the receiver over an action spring guide 5 which has a conical head or rear end 36 arranged in a corresponding recess 63 in the rear wall of the receiver. The guide is loosely mounted in the receiver, can be easily removed therefrom, but is held in place by the tension of the action spring. The front end of the spring 6 encircles the rear arm 57 of the ejector 7, and bears against a collar 7^a thereon, while the front end of the ejector extends into the chamber 29^a and at times passes entirely through it. The conical end 36, of the guide is pressed at all times firmly against the rear wall of the receiver and the spring tends to move the firing bolt towards the breech of the barrel.

The ejector 7 is guided in the chamber 29 and extends through the chamber 29^a, as above stated. When operating to eject a shell it projects beyond the front end of the firing bolt, but is at other times retracted by a relatively light spring 8 which is interposed between the front wall of the chamber 29 and the collar 7^a of the ejector. The action spring 6 holds the ejector normally in the position shown in Fig. 1 where the relative positions of the firing bolt and the ejector are shown as they appear at the moment of firing, while in Fig. 2, they are shown in the position they assume soon after firing, *i. e.*, after recoil, when, it will be observed, the springs 6 and 8 are compressed and the ejector protrudes from the front of the firing bolt. It will be observed that the bolt is advanced by the combined pressures of both springs 6 and 8, and that both springs serve to brake the recoil. By causing the front coil of the spring 6 to bear against the ejector when the breech is closed, the ejector is prevented from falling out should the gun be held in a vertical position with its butt stock lowermost. The ejector being arranged eccentrically when it is protruded, it will strike the rear end of the shell at one side of its axis causing the shell to be ejected in the manner hereinafter described. On its under side the firing bolt is formed with a recess and shoulder 26 with which the sear 9 engages to cock the arm, as shown in Fig. 2, and it is also formed with a recess and shoulder 27 adapted to engage with the sear as soon as the firing bolt has reached the limit of its forward movement and the arm is fired. This is for the purpose of braking the recoil in the manner hereinafter described. A side opening 32 is formed in the receiver through which extends a handle 69 which projects laterally through one side of the firing bolt, and by means of which the bolt may be retracted by hand if desired. This handle serves to prevent the

bolt from turning and serves also to retain the bolt in the receiver when the arm is taken apart. By detaching the handle from the firing bolt, the latter may be easily removed from the receiver.

The magazine or cartridge box 45 is closed at the bottom and on all sides, but is open at the top. The sides are formed of sheet metal and at the top of the magazine an overhanging forwardly projecting lip 61 is formed on the rear wall, and just in front of this lip on opposite sides, lips 73 are formed which prevent the rear end of the top cartridge from rising out of the magazine until it has been moved forward by the firing bolt. The upper edge of the front wall of the magazine is beveled or inclined at 60 for the purpose of elevating the front end of the top cartridge to facilitate its passage to the cartridge chamber *a*. The forwardly projecting lip 61 coöperates with the inclined surface 60, in the following way: As the topmost cartridge in the magazine rises after the recoil of the firing bolt, it is held by the lip a little in advance of the others below it (Fig. 2) with its front end above the inclined surface 60, so that the tendency of the front end of the cartridge to lower into the magazine is prevented. The front end of the cartridge under such circumstances will be received by the inclined surface and as the firing bolt moves forward the front end of the cartridge will rise on the incline and enter the cartridge chamber of the barrel. Were it not for this the front end of the cartridge might be depressed to such an extent in the magazine as to be caught in the front wall thereof. Lips 74 are formed on the upper edge of the side walls of the cartridge box near its front end to prevent the front end of the cartridge from rising too high when feeding a cartridge into feeding position in front of the firing bolt. The magazine is detachably connected with the frame of the arm by means of a spring catch 21 pivoted near its middle portion at 20 and having a tooth 22 above its pivot arranged to engage either of two recesses 62 or 62ˣ in the rear wall of the magazine. When the tooth engages the notch 62ˣ, the magazine is held below its feeding position, but when the tooth engages the notch 62, the magazine is held in feeding position and will automatically feed cartridges to the receiver and hold them in position to be carried to the cartridge chamber of the barrel by the firing bolt.

The magazine spring 48 is of usual construction and operates in conjunction with a follower 49 which is similar in construction to that shown in my above mentioned patent, and operates in a similar way.

A lug 55 is formed on the front wall of the magazine or cartridge box near its upper end which is adapted to engage a recess 55ᵃ in the frame 42 just below the boss 52 of the receiver. This serves to lock the front portion of the frame in place and in connection with the catch 21 firmly holds the magazine in place. It will be observed that the lug 55 extends into the recess 55ᵃ and rests on the lower wall thereof so that it supports the front portion of the magazine which cannot be moved straight downwards. Immediately in rear of the cartridge box of the magazine there is a recess just in advance of the sear, as shown in Fig. 1, so that when the catch 21 is released, the box can be tilted sufficiently to disengage the lug 55 from the recess 55ᵃ. The sear 9 is pivoted to the frame at 10 below the bottom wall of the receiver and it is formed on its upper rear end with a lug 23 adapted to engage in the notches 26 and 27 of the firing bolt. It operates through a suitable opening in the bottom of the receiver and its lug or tooth 23 is normally held in an elevated position by means of a spring 14 carried by a pin 13 which bears against the catch 21 above its pivot and extends into an opening 15 in the lower portion of the sear and bears at its rear end against the pawl 11, which is pivoted to the sear at 12 by a transversely arranged pivot pin.

The spring 14 serves the double purpose of pressing the catch into engagement with the cartridge box or magazine and of holding the sear in engaging position. The pawl 11 is adapted to swing on its pivot in a vertical plane. The spring 14 tends to hold the pawl in the position shown in Fig. 1, as the spring presses against the upper rear end of the pawl. The pawl 11 is adapted to coöperate with the trigger 16 which is pivoted at 17 to the frame 42 and carries a spring 18 secured by a screw 19 to the trigger and bearing against the rear wall of the frame chamber in which the trigger and the sear are located. The spring tends to hold the trigger in the position shown in Fig. 2 with its upper front end above the upper rear edge of the pawl 11 and when in this position if the trigger be pulled, the pawl 11 will be moved downwards carrying with it the sear which then separates from the firing bolt and permits the latter to be shot forward by the force of the action spring. As soon as the firing bolt has reached the limit of its forward stroke the trigger will occupy the position shown in Fig. 1, its upper front end bearing against the rear face or edge of the pawl 11 and the lug 23 of the sear enters the recess 27 in the rear portion of the firing bolt, thus resisting the recoil of the firing bolt and affording a brake which, however, is overcome as soon as the pressure of the gases has sufficiently accumulated. As the firing bolt recoils, the sear is depressed but again enters the notch

26 after the bolt has recoiled and moved forward a short distance. The pawl and trigger coöperate in such manner as to permit these movements. The firing bolt is also provided with a notch and shoulder 25 by means of which it may be held in its half cocked position if desired. The firing bolt has an inclined surface 56 on its under side against which the sear bears as the bolt moves forward. This engagement of the sear with the bolt tends to check the speed of the bolt while advancing.

The rear end of the receiver is closed, being formed integrally with the main body thereof and on the rear end of the receiver I provide a vertically adjustable back sight 37. In Fig. 1 the sight is shown as consisting of a plate mounted to slide in a suitable groove in which it is held frictionally by a headed pin 35 arranged in a recess 33 and pressed against the sight by a spring 34. The recess 33 may, of course, be of small dimensions and does not materially weaken the receiver. The sight is provided with the usual peep hole 38 and its lower end extends into a recess 40 in the butt stock 39. The sight is provided with a shoulder 75 just above its lower end. Preferably the sight has a dove-tail connection 76, 78 with the rear end of the receiver, as shown in Fig. 15, and the rear face of the sight may be serrated or roughened to permit of its easy manipulation. It will be observed that the firing bolt fits the bore of the receiver closely while free to reciprocate therein. It is preferably reduced in diameter at 100 for the purpose of minimizing friction, leaving cylindrical bearing surfaces 101 which fit the bore of the receiver closely. The rear portion of the receiver is closed air tight from its extreme rear end up to the opening 102 in its bottom wall through which the sear 9 operates. It is clear, therefore, that when the firing bolt recoils, air is compressed in the rear portion X of the firing bolt chamber. During recoil the opening 29^a in the front end of the firing bolt is closed by the cartridge shell and remains so closed until the ejector operates to expel the shell. Therefore the operation is such that when the firing bolt recoils, air is compressed in the firing bolt chamber of the receiver which acts to check the recoil and this check is relieved after the bolt has recoiled and the shell has been ejected. It will be understood that the ejector is loosely mounted in the chambers 29 and 29^a, that is to say, the diameters of these chambers are greater than the diameters of the adjacent parts of the ejector so that there is a sufficient space around the different parts of the ejector to allow air to pass out through the front end of the firing bolt when the front opening is not closed by the cartridge shell

The arm thus described is entirely automatic, it being necessary only to operate the trigger to fire the entire charge of cartridges in the magazine. When the arm is in firing condition, as indicated in Fig. 2, and the trigger is pulled, the firing bolt moves forward, engages the rear end of the top cartridge 50 in the magazine, first shoves it against the incline 60 and then into the cartridge chamber *a* of the barrel. The lip 61 causes the top cartridge to move slightly forward before it is struck by the bolt. As the bolt moves forward after engaging the cartridge the latter centers itself in line with the axis of the barrel and immediately after the cartridge is thus inserted it is fired by the further advance of the bolt. Just before the cartridge is fired, however, or at that instant, the lug 23 on the sear engages the firing bolt at the recess and shoulder 27, as indicated in Fig. 1. The force of the gases developed by the explosion overcomes the resistance afforded by the interlocking sear which lowers out of the way and the bolt is retracted to its cocked position and is immediately engaged by the sear, while the empty shell at the same time is expelled into the receiver, its rear end remaining in the chamber 30, and the ejector 7 advances from the front of the firing bolt, strikes the shell eccentrically and expels it through the opening 32 at the side of the receiver. A cartridge then rises to the top of the magazine into position in front of the lip 61 to be engaged by the firing bolt on its next forward movement. While being recoiled the air is compressed in the rear portion of the receiver in the manner above described, thus checking the recoil and very materially diminishing the shock incident thereto. The air pressure is relieved when the shell is expelled in the manner before stated. I prefer to use the pneumatic check, above mentioned, in connection with the check provided by the engagement of the sear as specified, but I may use either of these checks separately or combined as desired.

It is sometimes desirable that the firing bolt should have a shorter travel when advancing to fire. This I may accomplish by the construction shown in Fig. 3, where, it will be observed, the cocking recess and shoulder 26 are arranged further back on the firing bolt and the cartridge is part way inserted into the cartridge chamber *a*. The bolt may recoil to the same extent but moved forward to a greater extent, inserting the cartridge, in the manner indicated before being arrested before the complete insertion of the cartridge or the firing thereof. Otherwise the construction shown in Fig. 3 is substantially the same as that shown in Fig. 1. In Fig. 3 the parts are shown in firing position.

In Fig. 15 I have shown a modified way

of arranging the action spring and guide and also a modified way of arranging the rear sight. In this case the headed pin 35 extends through a central opening in the rear wall of the receiver and bears on the sight 37, as indicated. This figure indicates the dovetail connections 76, 78 between the sight and the receiver by means of which it may be guided vertically. The sight is preferably formed in the manner indicated in Figs. 12 and 13. 38 indicates the peep hole and the sight is preferably serrated, as indicated, for the purpose of affording a finger hold while making adjustment. The spring 34 is made heavier and stronger than the spring 6, and it enters a recess or a chamber 79 in the rear portion of the guide 5. The arrangement is such that the guide 5 is held in an advanced position by the spring 34 so that the cartridge shell is ejected immediately after it leaves the barrel. As the spring 34 is stronger than the action spring 6, the guide 5 is held in an advanced position until the firing bolt strikes the guide. The backward movement of the firing bolt is then first resisted by the action spring 6, and later by the stronger supplementary spring 34. By this arrangement the force of the recoil is broken gradually and the bolt strikes softly against the rear wall of the receiver.

The arm may conveniently be used as a single loader, if desired, cartridges being inserted through the opening 32.

The arm is easily cleaned and there are few parts and these are largely loose and readily detached. The firing bolt, the action spring, the action spring guide, the ejector, its spring, the sear spring 14, and the pin 13 are all loose and can be readily taken out and cleaned. The barrel can be detached from the receiver and the firing bolt and the parts associated therewith can all be easily withdrawn through the front end of the receiver. This is done by detaching the magazine, loosening the assembling screw and unscrewing the barrel. The frame can then, if desired, be removed from the stock and receiver by withdrawing the assembling screw 70.

I claim as my invention:—

1. A firearm comprising a reciprocating breech bolt and a pneumatic check for the breech bolt which is provided with an escape for the compressed fluid which is closed during the first part of recoil but which is opened automatically to permit the escape of the fluid before the arm is cocked.

2. An automatic firearm in which the firing bolt recoils by the pressure of gases developed immediately after firing and which is provided with a pneumatic check for the firing bolt having an escape for the fluid closed during the first part of recoil but automatically opened before the arm is cocked.

3. An automatic firearm in which the firing bolt recoils by the pressure of gases developed immediately after firing and which is provided with a pneumatic check for the firing bolt arranged in the receiver which acts directly on the bolt and has an escape for the fluid which is closed during the first part of recoil but which is automatically opened before the arm is cocked.

4. An automatic firearm comprising a receiver, a firing bolt reciprocating therein, means for cocking the bolt, and a pneumatic check acting upon the firing bolt which is provided with an escape for the fluid closed during the first part of recoil but automatically opened before the arm is cocked.

5. An automatic firearm comprising a receiver, a reciprocating firing bolt, an ejector carried thereby but having movement independent thereof, a pneumatic check for the firing bolt having an air escape closed during the first part of recoil by the cartridge shell, and means for operating the ejector to expel the shell and to relieve the pneumatic check.

6. A firearm in which the firing bolt reciprocates in a receiver and is provided with a pneumatic check for the firing bolt having an air escape opening closed immediately after firing by the cartridge shell, but opened when the cartridge shell is ejected.

7. An automatic firearm comprising a receiver, a reciprocating firing bolt, an ejector carried thereby and mounted to move through an opening in the front end of the bolt, which opening is closed during recoil by the shell of the exploded cartridge, a pneumatic check for the firing bolt communicating with the opening in the front end of the bolt, and means for operating the ejector to expel the cartridge shell and to thus relieve the pneumatic check on the bolt.

8. An automatic firearm comprising a receiver, a chambered firing bolt reciprocating therein, an ejector carried by, but having a movement independent of, the firing bolt and which extends through an opening in the front end of the firing bolt which opening communicates through the firing bolt with the firing bolt chamber of the receiver, and means for operating the ejector to expel a cartridge shell and to thus open communication between the opening in the front end of the firing bolt and the rear portion of the firing bolt chamber of the receiver.

9. An automatic firearm comprising a receiver, a firing bolt reciprocating therein and provided with a cocking recess, a sear operating through an opening in the bottom wall of the receiver to engage the cocking recess of the bolt, an air chamber in the receiver in rear of the opening in the receiver wall through which the sear operates to provide a pneumatic check for the firing bolt,

an air escape opening for the pneumatic check which is closed during the first part of recoil, and means for opening the air escape opening before the arm is cocked.

10. An automatic firearm comprising a reciprocating firing bolt, a locking device which temporarily holds the bolt immediately after firing but which thereafter withdraws to allow the bolt to recoil, and a spring for moving said locking device into engagement with the bolt.

11. An automatic firearm in which the firing bolt is free to recoil by the pressure of gases developed immediately after firing, a locking device engaging the firing bolt at the moment of firing and holding it until the pressure of accumulated gases is sufficient to overcome its resistance to the recoil of the bolt, and a spring for moving the locking device into engagement with the bolt.

12. An automatic firearm comprising a reciprocating firing bolt, a sear adapted to engage therewith to hold the bolt in cocked position and also to engage the bolt at the moment of firing and to temporarily check the recoil thereof.

13. An automatic firearm comprising a reciprocating firing bolt, a sear adapted to engage therewith to hold the bolt in cocked position and also to engage the bolt to temporarily arrest the recoil, and an action spring for moving the bolt forward.

14. An automatic firearm in which the reciprocating firing bolt, a pneumatic check acting directly thereon, a locking device engaging the firing bolt at the moment of firing and temporarily arresting the recoil of the bolt, and a spring for moving the locking device into engagement with the bolt.

15. An automatic firearm comprising a reciprocating firing bolt, a receiver in which it operates, a pneumatic check in the receiver acting directly upon the firing bolt and which is provided with an air escape opening, which is closed during the first part of recoil but is automatically opened as the bolt recoils, a sear adapted to engage the bolt to hold it in its cocked position and also to engage the bolt at the moment of firing to temporarily arrest the recoil, and a spring for moving the sear into engagement with the bolt.

16. An automatic firearm comprising a reciprocating firing bolt formed with three notches for the engagement of the sear with one of which the sear engages to hold the bolt in firing position, with another of which it engages to hold the bolt in half cocked position, and with the third of which it engages when the bolt is in its forward position at the time of firing.

17. In an automatic firearm the combination of a reciprocating firing bolt having a recess in its front end to receive the rear end of the cartridge and formed with an integral firing point, an eccentrically arranged ejector carried by the firing bolt and adapted to engage the rear end of the cartridge shell eccentrically of its axis, and means for holding the firing bolt in its forward position after firing until the gas pressure causes the bolt to recoil, the empty shell being forced from the barrel without an extractor by the force of the explosion gases into position to be expelled from the receiver by the ejector, substantially as described.

18. In an automatic firearm the combination of a reciprocating firing bolt, a receiver in which it operates, means for automatically feeding cartridges to the receiver, and means for cocking the firing bolt after it has partially inserted a cartridge in the barrel.

19. The combination with a reciprocating firing bolt, of a magazine formed with vertical side walls having inwardly projecting lips at the top for limiting the upward movement of the front portion of the cartridge, a vertical wall formed with an inclined upper edge arranged close to and leading directly to the cartridge chamber of the barrel below said lips, and a rear wall formed with a forwardly projecting lip which as the cartridge rises in the box causes the topmost cartridge to move forward and assume a position in line with the lower portion of the firing bolt with its front end above but close to the inclined surface of the front wall of the box.

20. The combination with a reciprocating firing bolt, of a cartridge box, a catch adapted to engage with the rear portion thereof, a sear adapted to engage the firing bolt, a pawl carried by the sear adapted to engage the trigger and a spring acting on the pawl and also on the catch.

21. The combination of the frame having a recess in its upper front portion and a lug in front of said recess, a receiver having a boss entering the recess in the frame and a recess receiving the lug on the frame, and an assembling screw for connecting the parts.

22. An automatic firearm comprising a reciprocating firing bolt provided with an inclined under surface, a sear adapted to bear against such inclined surface to retard the movement of the bolt, and a spring for pressing the sear into the path of said inclined surface.

23. The combination of the frame of the arm, the butt stock, its shank, the receiver connected at its front end to the frame, and an arm on the rear portion of the receiver connected directly with the shank of the butt stock.

24. The combination of the frame, the receiver, the butt stock, an assembling screw connecting the front portion of the frame with the receiver, an arm on the rear end of

the receiver and an assembling screw for connecting this arm with the butt stock.

25. The combination of the frame, the receiver having an interlocking connection with the frame at its front end, an assembling screw therefor, the butt stock, a bifurcated arm projecting downwardly from the receiver, a tongue on the frame engaging the bifurcated arm and an assembling screw for connecting the parts.

In testimony whereof, I have hereunto subscribed my name.

CARL L. H. PRINKE.

Witnesses:
SAMUEL J. FISHER,
JOS. W. SELBY.