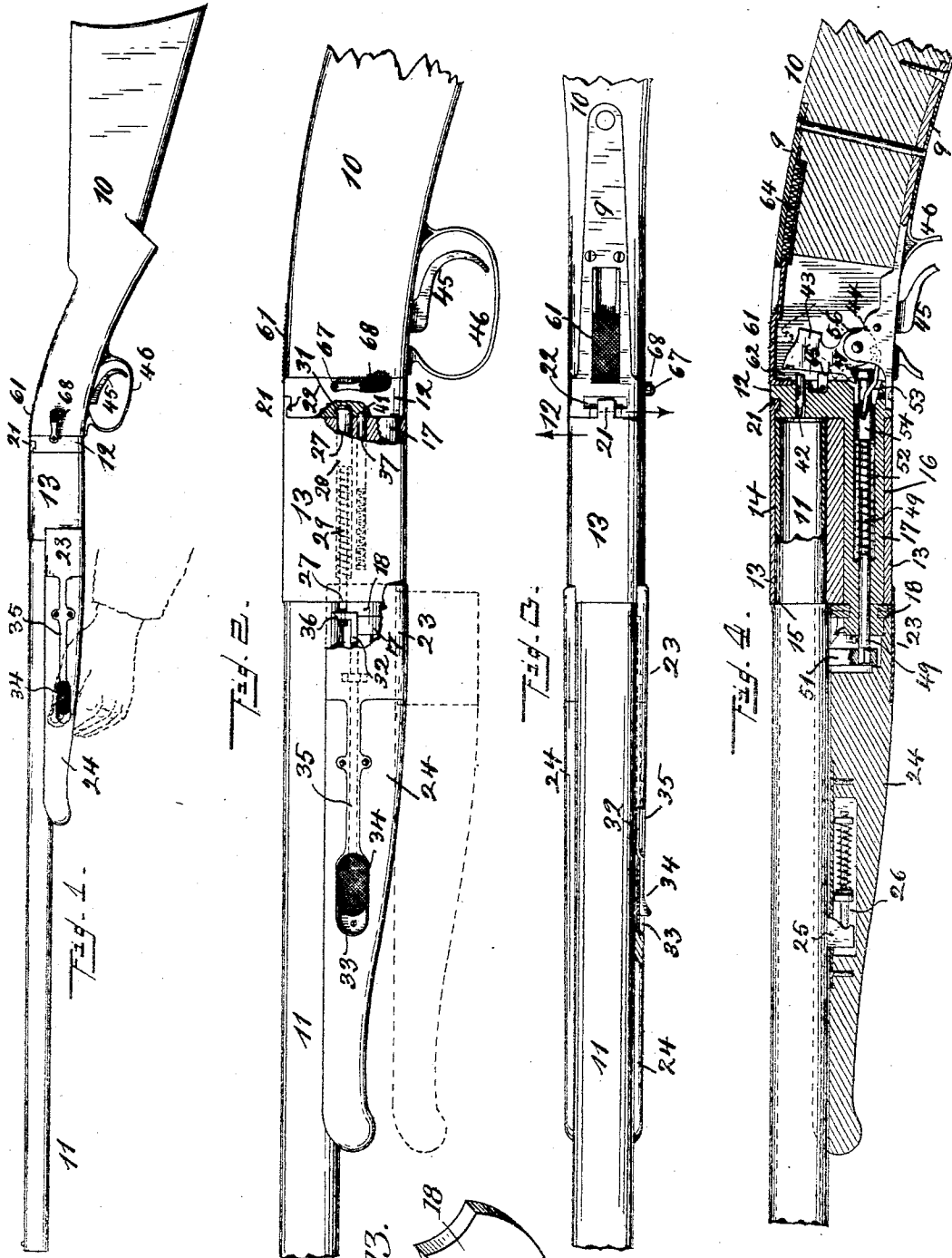


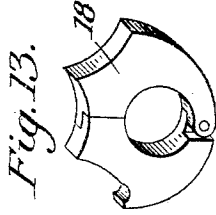
P. F. ZEISE.
FIREARM.

APPLICATION FILED APR. 27, 1904.

2 SHEETS—SHEET 1.



Witnesses
Arthur Kline
John J. Graf

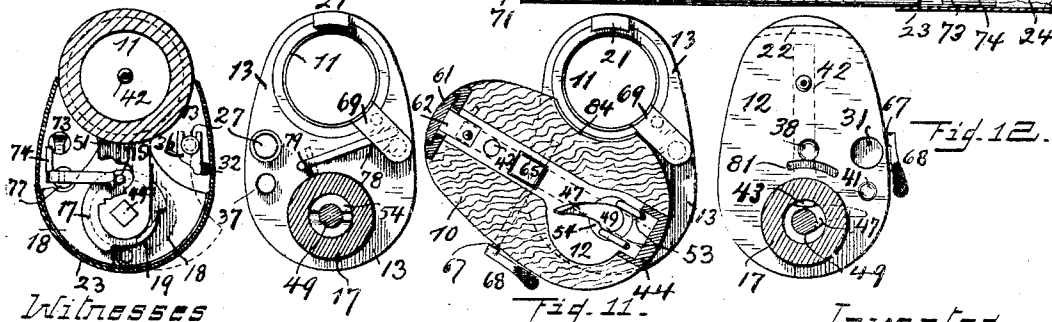
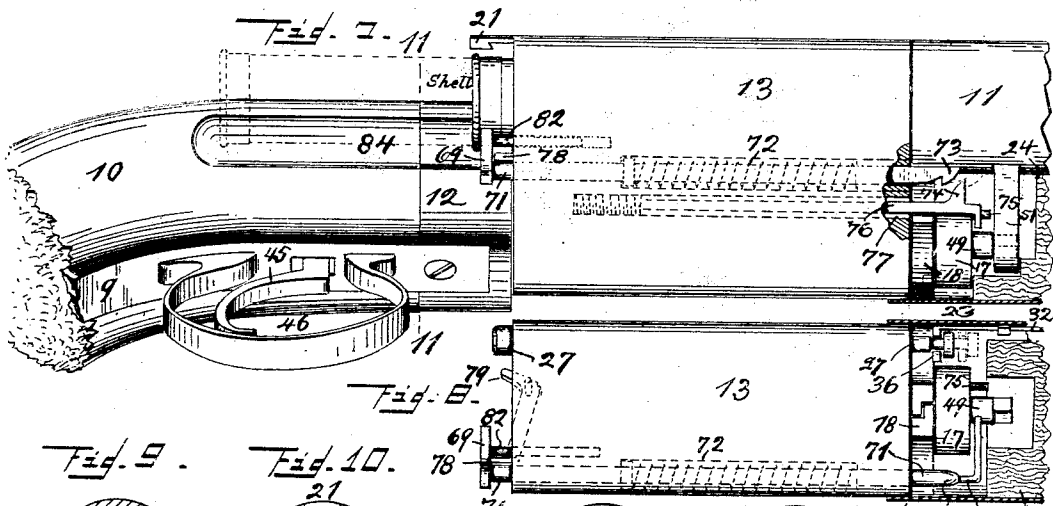
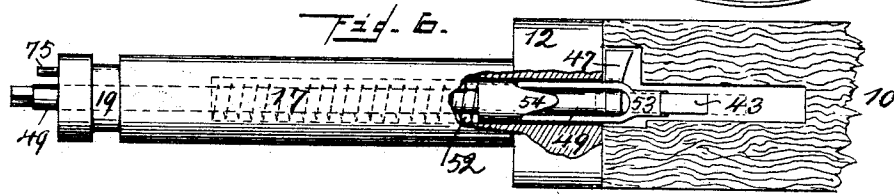
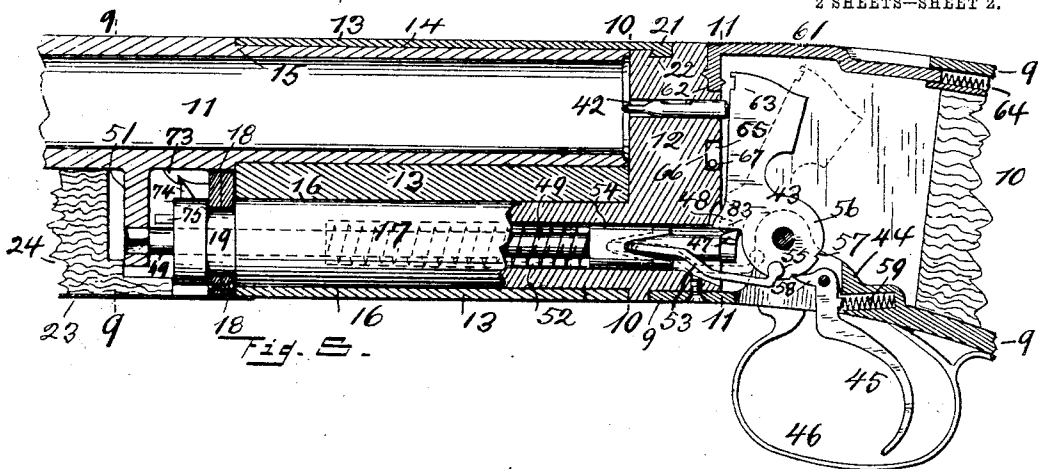


Inventor
Peter F. Zeise
by C. Spengel atty.

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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

PETER F. ZEISE, OF MIDDLEPORT, OHIO.

FIREARM.

No. 801,295.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed April 27, 1904. Serial No. 205,158.

To all whom it may concern:

Be it known that I, PETER F. ZEISE, a citizen of the United States, residing at Middleport, in the county of Meigs and State of Ohio, have invented certain new and useful Improvements in Firearms; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying two sheets of drawings, with the reference characters marked thereon, which form also a part of this specification.

This invention relates to improvements in firearms, like shotguns and similar small-arms, which are loaded at the breech. The invention consists of certain improvements in construction in the following parts and features; in the means whereby the mere act of loading effects also the cocking of the gun automatically; in the means whereby the hammer may also be manipulated—that is, cocked or let down positively by direct manual manipulation; in a shell-extractor operating both automatically and positively; in a safety-lock to prevent accidental and premature discharge of the loaded gun. Finally, there are such features of construction in general and in detail as will be necessary in connection with the parts mentioned and in order to obtain a proper efficient and harmonious operation and complementary interaction of the entire mechanism.

In the following specification, and particularly pointed out in the claims, is found a full description of the invention, together with its manipulation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 illustrates my invention in connection with a shotgun, which latter is shown in side elevation. Fig. 2 in a similar but enlarged view shows the middle portion of the same gun, parts being broken away. Fig. 3 is a top view of the gun shown in Figs. 1 and 2. Fig. 4 is a longitudinal vertical section of the gun. Fig. 5 is a view similar to Fig. 4, of which it shows the middle portion at an enlarged scale, illustrating, essentially, the general mechanism. Fig. 6 is an under side view of parts shown in the preceding figure, it showing more particularly the breech-block with parts broken away. Fig. 7 is a view similar to Figs. 1 and 2, only enlarged, and shows the opposite side and the gun open for loading. Fig. 8 is a top view of Fig. 7, showing the shell-ejector mechanism, the gun-barrel being removed. Fig. 9 shows a section

on line 9 9 of Fig. 5 looking toward the right. Fig. 10 shows the open rear end of the gun, being a section on line 10 10 of Fig. 5. Fig. 11 is a cross-section on line 11 11 of Figs. 5 and 7 and shows the gun open for loading. Fig. 12 shows the complementary or opposite surface to Fig. 10 and section 10 10, it being the front side of the breech-block opposite the open rear end of the gun. Fig. 13 is a perspective view of the removable locking-collar whereby the separable parts of the gun are detachably held to each other.

In the drawings, 10 is the stock or grip of the gun, as usual of wood, and 11 is the barrel, which may be either rifled or smooth, as shown. The open rear end of the barrel is closed by the breech-block 12, attached so as to form a part of the stock. This attachment is preferably by flanges or tangs 9.

The gun-lock, meaning thereby the members comprising the loading, cocking, and firing mechanism, is contained partly in this breech-block and front part of the stock and partly in an enlargement on the under side of the rear end of the barrel and directly in front of the breech-block. By preference and for convenience in manufacture this enlargement is made of an independent piece of metal, but rigidly and immovably connected to the barrel, so that the two for all practical purposes form one unitary piece. Since its most important function is to serve as one of the complementary members whereby the end of the barrel is held to the stock, a suitable designation as expressing such function is "barrel-coupling." This member is indicated by numeral 13. It has two parallel bores, the upper one, 14, of which receives the open rear end of the barrel, the connection between the two being a permanent one. The inserted part of the wall of the barrel may be reduced, as shown at 15 in Figs. 4 and 5, so that the upper outer part of the barrel presents a smooth and continuous surface and a clear and undisturbed range for sight purposes. The lower bore 16 receives a cylindrical projection 17 on the front side of breech-block 12, the connection between the two latter parts being rigid, and may also be integral. When this projection 17 occupies bore 16, the function whereby member 13 couples the barrel to the stock is completed. This connection between members 13 and 17 is a fixed one longitudinally only; but otherwise it permits them to turn on each other—that is, member 17 may turn within bore 16

or member 13 may rotate about said member 17. This rotary motion, of which projection 17 forms the pivot and whereby the breech-block is moved laterally and gives access to the open rear end of the barrel, as shown in Figs. 7 and 11, for insertion of a cartridge forms the loading motion and is carried out either by one or by the other hand, or by both simultaneously, each performing part of it—that is to say, the rear or trigger hand gives the stock a sharp turn to the left, while the other hand holds the forward part of the gun immovable, or the forward hand may give the barrel a quick turn to the right, while the rear hand holds the stock. Finally, both hands may be used simultaneously by working against each other in opposite directions. (See arrows in Fig. 3.) When the rear end of the barrel is thus open for access, as shown in Figs. 7 and 11, the rear hand leaves the stock and inserts the cartridge, while the front hand meanwhile supports the gun. The closing manipulation is performed in the same manner only in opposite direction. The two complementary parts of this connection—that is, pivot 17 and coupling 13—are kept in engagement lengthwise by certain means, which are removable to permit a quick and ready detachment and separation of the gun at its coupling-joint to reduce its bulk for packing or shipping purposes. For such detachable connection I use a sectional ring or collar 18, which occupies an annular groove 19 in pivot 17, the arrangement being such that said collar while occupying its groove bears also simultaneously against the end of the surrounding barrel-coupling, thus preventing separation of the engaged complementary parts. The two sections of this collar are hinged to each other, so that when laterally open, as best shown in dotted lines in Fig. 9, pivot 17 may be withdrawn from bore 16 and the gun separated in two parts. This can be done, however, only when the gun is open—that is, with its parts in position for loading, as shown in Figs. 7 or 11—because otherwise and when closed an additional lock, which also holds these parts to each other lengthwise, prevents such separation at that time. This additional coupling-lock consists of a locking-hook 21, projecting rearwardly from the open rear end of the barrel-coupling and fitted into a corresponding groove 22 in the upper part of the breech-block. This groove is laterally open at its ends to permit this hook to swing in and out during loading. This additional lock or breech-block coupling holds the breech-block firmly against the open end of the barrel, so as to resist the recoil during the act of firing. Sectional collar 18 may be held closed by any suitable means, but preferably by the rear end or ferrule 23 of the fore-stock 24, which stock on its upper side is concaved so as to fit against the under side of the barrel and against the outside of

said ring, thus holding this latter closed. This fore-stock is held in position against the under side of the barrel and against the enlargement at its rear end by a snap-lock consisting of a catch-lug or keeper 25 on the under side of the barrel and a spring-bolt 26, carried in a recess in the upper side of the fore-stock. (See Fig. 4.) The engagement is a yielding one which is sufficient for the purpose, since no strain or manipulation occurs tending to separate this member from the barrel, while a positive action or pull on its forward end readily loosens the fore-stock in a manner as best shown in dotted lines in Fig. 2. This gives access to collar 18 and permits after its removal separation of the gun at pivot 17 in its two main parts—that is, barrel and stock—without the use of tools. To lock these two parts of the gun to each other against rotation about pivot 17 and to hold them in normal position, especially after loaded, there is a positive locking-stop in shape of a pin 27, seated so as to be free to slide lengthwise in a bore 28 in coupling member 13, with a spring 29 behind it which normally holds its end within a socket 31 in the front face of breech-block 12. Its other end is engaged by the end of a rod 32, seated so as to be free to slide inside of the fore-stock, and the front end of which rod projects into a shallow recess 33, open outwardly on the side of the gun, where it is connected to a thumb-piece 34, so located as to be in convenient reach and right under the hand supporting the front part of the gun. (See dotted lines in Fig. 1.) By sliding this thumb-piece forward the coupled parts of the gun may be unlocked for pivotal rotation about the pivotal coupling-joint, as before described, to permit loading, and this unlocking and subsequent loading may be performed without lowering the gun from its firing position or changing position of hands. To provide for smooth working, this rod 32 slides under and against a metallic surface which is provided by a forward extension 35 of ferrule 23, and recess 33 is also lined with metal which is simply a continuation of this extension, both being fitted and embedded into the wood of the fore-stock. The connection of this rod 32 to the front end of locking-pin 27 is by means of an open fork 36, so that the detachment of the fore-stock, as before described, and shown in dotted lines in Fig. 2, is not interfered with by this connection. Likewise when put together these parts readily find their engaging position. There is an additional stop in shape of another pin 37, also seated in a bore in the barrel-coupling and spring-actuated, its function being to limit the rotary manipulation of the gun when the same is opened for loading, to prevent this motion from going beyond necessary limits, and to arrest it when the parts are in proper position for loading, after which it holds them so. This occurs when the end of

this stop arrives opposite a socket 38 in the face of the breech-block, into which socket it is then projected by means of spring 39 behind it. This stop is not a positive one, however; but by beveling the end of pin 37 the same by a slightly-increased effort or sharp twist may be forced out of this socket. When the gun is opened for loading, the resistance presented by this pin after it has slid into and occupies its socket is sufficient indication to the manipulator that the gun is sufficiently open for loading, and no further effort need be made. Frequent use soon educates the hand to readily feel and hold this position. For closing by means of a sharp turn this resistance is readily overcome. After the gun is closed the end of this pin slides into another similar socket 41 in the breech-block, which occupation is, however, of no further significance except to relieve spring 39 of unnecessary compression. It also slightly aids the positive locking-stop 27.

Seated in the breech-block in proper position and free to slide is the firing-pin 42, its rear end protruding so that it may be struck by the hammer 43 when the same descends. This latter is pivotally seated in the lock-frame 44, embedded in the gun-stock and held in customary manner by screws, rivets, or otherwise. Trigger 45 is also pivoted within this lock-frame and projects outwardly from the under side of the same. It is surrounded by the customary trigger-guard 46, also connected to this lock-frame.

The cocking of the hammer is effected by the manipulation whereby the gun is opened for loading. It is done by a cam 47 (shown best in Figs. 6 and 11) and upon which heel 48 of the hammer rests and which cam is held stationary with reference to the lateral motion of the hammer when the same, with the breech-block and gun-stock, is carried sideways during the motion whereby the gun is opened for loading. This cam is carried at one end of a rod 49, seated in an axial bore of pivot 17. It passes entirely through this latter and also through the breech-block 12, but has no further connection with these parts. Its axis being coincident with the axis of rotation of the parts of the gun-coupling, it neither interferes with nor modifies the function of these parts. Its other end is seated in a post 51, affixed to the barrel and held therein against rotation by a set-screw or by being squared, so that this rod 49 during the opposite movements, when the gun is opened for loading, becomes a part of and moves with the forward portion of the gun and by cam 47 at its other end furnishes the element which encounters the hammer and by its opposite action raises the same. This automatic cocking of the hammer also sets—that is, compresses—mainspring 52, which is contained in a counter-bore within pivot 17 and furnishes the energy necessary to produce the forcible impact where-

by the released hammer strikes the firing-pin. This setting is obtained by means of a fork-shaped pusher 53, the two members of which passing through the enlarged opening in the breech-block straddle the end of rod 49 in front of cam 47 and rest in notches in one end of a sliding head 54, mounted so as to be free to move on rod 49 and against the other side of which spring 52 bears. As will be seen, this spring is a spiral coil-spring and encircles rod 49. The other end of this pusher, where the two members of it are united, rests pivotally in a circular notch 55 in hub 56 of the hammer, so that when this hub turns while the hammer is being raised this pusher is moved against head 54, forcing the same against spring 52, and compresses the same. In due time a notch 57 in the edge of the hammer-hub 56 arrives opposite the end of trigger-heel 58, held against such edge by a coil-spring 59, and permits the trigger to snap in and engage the hammer, holding it against the action of spring 52. The parts are so arranged that this engagement takes place when the hammer is fully cocked, which occurs at the end of the movement whereby the gun is opened for loading. When the gun is now closed again, the trigger holds the hammer elevated against compressed spring 52 and the gun is ready for firing. Head 54 in addition to being free to slide on rod 49 is also free to rotate about the same, (see Fig. 11,) so that when the complementary parts of the gun-coupling turn about their pivot 17 the pusher 53, forming a connected part of the hammer and like it contained in the gun-stock, may readily move with the same by turning head 54 about rod 49, which latter belongs to and rotates with the forward parts of the gun.

As will be seen, the gun cannot be opened for loading without causing the hammer to become cocked. To avoid leaving the gun in cocked condition when not to be fired at once, the hammer may be let down by closing the gun slowly and holding at the same time the trigger back. To cock the gun again, it would now be necessary to repeat the opening manipulation again the same as for loading. To avoid this, I have positive means for cocking the hammer consisting of a thumb-piece 61, fitted with a sliding fit into ways provided in a recess in the upper part of the gun-stock above the hammer and having on its under side a hook 62, which engages when pulled back a notch 63 at the upper end of the front edge of the hammer. A coil-spring 64 returns and holds this slide to a normal position ready for use and in which position it also closes the recess below to keep dust and rain out of the gun-lock. It has no outwardly-projecting parts and is flush with the gun-stock, so as to present no obstructions.

Accidents by premature discharge of the cocked gun may be prevented by a safety-bar occupying normally a recess 66 in the rear

face of the breech-block and flush with the same. It is mounted on a shaft 67, supported in the breech-block, and may be manipulated by means of a handle 68, accessible on the
 5 outside. When swung out to a position as shown in Fig. 4, it projects into the path of the descending hammer and prevents this latter from reaching the firing-pin.

69 is the shell-extractor, consisting of a flat
 10 plate fitted into a recess in the rear end of the barrel in a manner to be flush with all surfaces thereof, the same as if it were an integral part. The inner edge of this plate forms a part of the circumferential edge around the
 15 bore of the barrel, it being shaped exactly like such edge, so that it will be in front of the rim of an inserted cartridge and capable of engaging such rim. (See Fig. 7.) It is carried at the end of a shank 71, fitted into a
 20 bore in barrel-coupling 13, and has a spring 72 behind it tending to project it rearwardly—that is, outwardly and away from the open end of the barrel. Normally it is kept in position against the end of the barrel by the
 25 front face of the breech-block when the gun is closed, so that when opened for reloading after firing the swinging aside of the breech-block at once releases the extractor and allows the spring behind it to throw it forcibly
 30 outwardly, as shown in Fig. 12, taking necessarily the shell with it. It must of course be returned again to normal position to be ready for action and also to permit closing of the
 35 gun. This return movement of it may be simultaneous with the insertion of a cartridge, the rim of the latter taking the extractor in with it, or it may be by an independent pushing manipulation by hand, which precedes such insertion or when no loading takes place.
 40 To hold the extractor in position after so pushed in until the gun is closed, after which the breech-block holds it, there is a hook 73 at its other end, which when the extractor is pushed in moves against a spring-catch 74,
 45 displacing the same first—that is, pushing it slightly to one side, so as to be caught thereby after having passed beyond it and when this spring-catch straightens itself out to normal position. This engagement is, however,
 50 merely a temporary one and simply for the purpose to hold the extractor back until the gun is closed, after which the breech-block assumes this function. This engagement must therefore be broken again to release the
 55 extractor from catch 74 and to put it into a condition in which it is free to operate instantly when released by the laterally-moving breech-block when the gun is opened for reloading. This is done by a suitable projection in form
 60 of a cam or pin 75 on the outer free end of pivot 17, with which it moves when said pivot rotates during the opening and closing manipulation of the gun. This cam during the last part of the closing movement of the gun is
 65 now carried against this catch 74 and pushes

the same sidewise and away from under hook
 73 on the end of the extractor-stem. It also holds it so, so that the extractor is now free from interference by it and may operate
 70 instantly and whenever released by the breech-block. (See Fig. 9.) During the opening movement of the gun for loading after firing
 75 cam 75 releases again this catch 74, so that this latter is free and ready to again temporarily hold the extractor when the same is pushed
 80 in before the gun is closed, as before described. Shank 76 of this catch 74 is of elastic material—that is, spring metal—and is set in a bore
 85 77 in barrel-coupling 13 of sufficient size to permit the necessary lateral movements of the catch in two directions.

Extractor or shells are liable to stick sometimes, in which case spring 72 might not have
 85 sufficient force to throw the extractor out automatically and overcome in addition also this obstruction. For such emergencies I provide means operating positively by pulling
 90 the extractor forcibly out from its barrel. These means consist of an angle-lever pivoted in a recess in the rear face of the gun—that is, in the surface contiguous to and in front
 95 of the breech-block. One end 78 of this lever reaches under the extractor. The other end 79 projects outwardly from this surface and into a groove 81 in the opposite surface,
 100 which is the face of the breech-block. This groove is circular and concentric with the center of rotation of the gun-coupling, so as not to interfere with this motion. It is also of sufficient length for such purpose so as not
 105 to interfere with the complete opening of the gun. This length is, however, so arranged that before the gun is completely opened the end of this groove strikes the projecting end
 110 79 of the angle-lever and tilts the same, whereby the other end 78 is moved outwardly and takes the extractor with it, provided it is still there by reason of the force of spring 72
 115 having been insufficient to expel it before. It is essential that in its movements in and out the extractor move accurately to come
 120 always to a seat snugly within its recess in the end of the barrel, so as not to obstruct the closing movement of the gun. This could be done by having its shank 71 square and
 125 fitted accordingly into the barrel-coupling. I prefer to use a short guide-rod 82, arranged parallel to shank 71 and fitted into a bore in the barrel-coupling, in which it moves in and
 130 out with the extractor. By being some distance away from shank 71 the extractor is held at two different points, and thus kept straight during its movements.

The under side of the front end of the hammer which is in contact with cam 47 may
 125 carry a ball 83 to reduce the friction.

By providing a recess 84 on the right side of the gun-stock and breech-block (see Figs.
 7 and 11) to permit insertion of a cartridge the more extensive opening movement of the
 130

gun otherwise necessary to permit loading is avoided and such movement correspondingly reduced.

As will be seen, only spiral springs are used, all flat springs are avoided, the gun is conveniently manipulated for quick loading and may be readily taken down—that is, separated—without requiring removal of screws or the assistance of tools.

Having described my invention, I claim as new—

1. In a firearm, the combination of a barrel open at its rear end, a breech-block fitted against this end, a pivot projecting from the face of the breech-block and arranged parallel to the barrel, an enlargement on the under side of this latter, a bore in this enlargement fitted to receive said pivot, a locking-collar consisting of two sections hinged to each other at the end of the pivot where the same projects through this bore and means to hold this collar to the pivot.

2. In a firearm, the combination of a barrel open at its rear end, a lateral enlargement of the barrel at this end, a bore in this enlargement parallel to the barrel and open at both ends, a breech-block fitted against this enlarged end, a gun-stock secured to one side of the breech-block, a pivot projecting from its other side and fitted into the bore adjacent to the barrel so as to project beyond this bore, a groove in this projecting end, a collar, consisting of two sections hinged to each other and fitted into this groove and a fore-stock fitted detachably against the barrel and the sectional collar in a manner to hold the same in place within such groove.

3. In a firearm, the combination of a barrel open at its rear end, a breech-block fitted against this end, a pivot projecting from the face of the breech-block and arranged parallel to the barrel, an enlargement on the under side of this latter bored to receive this pivot and whereby barrel and breech-block are connected to each other permitting one to move laterally with reference to the other and transversely across the open barrel, means to confine this pivot within its bore, a gun-stock attached to the breech-block, a fore-stock detachably attached to the barrel and by means of which stock the two parts of the gun may be manipulated in opposite directions about their coupling-joint, a locking-stop carried in the enlarged part of the barrel, a socket in the breech-block which it occupies when the gun is closed, a spring operating to normally hold this locking-stop in such position, a pull-rod provided at one end with an open fork whereby it is detachably connected to this stop and extending forwardly into the fore-stock, a thumb-piece on the other end of this rod and a recess in the side of the fore-stock into which this thumb-piece is fitted so as to be accessible and free to slide for the purpose of permitting unlocking of the gun.

4. In a firearm, the combination of a barrel, a gun-stock, a recess in this latter back of the barrel, a hammer pivotally supported in this recess, an accessible spring-actuated slide fitted in this recess, so as to close the same flush with the gun-stock and to cover the hammer below, a projection on the under side of the slide adapted to engage the hammer so that movement of this slide cocks the hammer, a releasable trigger adapted to hold the hammer after cocked and a spring adapted to be compressed by the cocking of the hammer.

5. In a firearm, the combination of a barrel open at its rear end, a breech-block fitted against such end, a hollow pivot by which it is held thereto in a manner to swing transversely across such open end, a gun-stock connected to the breech-block, a hammer mounted back of this latter in the gun-stock, a projection on the hammer, a rod within this hollow pivot, a post projecting from the under side of the barrel whereby this rod is rigidly held to the barrel and stationary with reference to the gun-stock, and a cam projecting from the inner end of this rod and adapted to engage the projection on the hammer, so as to raise the same when the gun-stock is turned with reference to the barrel to open the gun for loading.

6. In a firearm, the combination of a barrel open at its rear end, a lateral enlargement of the barrel at this end, a bore in this enlargement parallel to the barrel, a breech-block fitted with one side against this enlarged end, a pivot projecting from this side and fitted into the bore mentioned, a gun-stock connected to the other side of the breech-block, a hammer pivotally supported in the gun-stock, means to cock the same, a spiral spring seated in a bore within this pivot and intermediate means whereby the cocking of the hammer causes compression of this spiral spring.

7. In a firearm, the combination of a barrel open at its rear end, a lateral enlargement of the barrel at this end, a bore in this enlargement parallel to the barrel and open at both ends, a breech-block fitted with one side against this enlarged end, a longitudinally-perforated pivot projecting from this side and fitted into the bore mentioned, a gun-stock connected to the other side of the breech-block, a hammer pivotally supported in the gun-stock, a rod extending through the hollow pivot and terminating in front of the hammer, the same connected to one end so as to turn with the barrel, a cam at its other end, a projection on the hammer adapted to engage this cam when the hammer is turned with the gun-stock, thereby raising this hammer, a spiral spring encircling this rod, a sliding head on this latter and means whereby the raising of the hammer pushes this head against this spring in a manner to compress the same.

8. In a breech-loading firearm, the combination of a barrel open at its end, a recess in

this end open outwardly as well as toward the bore of the barrel, a shell-ejector fitted into this recess, a shank on which it is mounted, a spring tending to move the same away from its recess, a breech-block fitted adjustably against the open end of the barrel to permit access thereto for loading and to close the same thereafter and to hold the ejector against its spring and ready for action, the rear end of the barrel being enlarged and provided with two bores, parallel to each other and to the axis of the barrel, one of these bores being occupied by the ejector-shank and a guide-rod 82, fitted to occupy the other bore and attached to the ejector to guide the same in proper position during action.

9. In a breech-loading firearm, the combination of a barrel open at its end, a recess in this end open outwardly as well as toward the bore of the barrel, a shell-ejector fitted into this recess, a shank on which it is mounted, a spring tending to move the same away from its recess, a breech-block fitted against the open end of the barrel, a pivot whereby it is mounted in a manner to have a transverse movement with reference to the barrel to close the open end of the same and to hold the ejector in position against the compressed spring so as to be free to be expelled thereby when the breech-block releases the same, when the gun is opened

for reloading, a spring-catch to temporarily hold the ejector in its retarded position before the breech-block performs this function after closing of the gun and operative connection whereby this closing of the gun detaches this spring-catch to leave the ejector free for action.

10. In a breech-loading firearm, the combination of a barrel open at its end, a recess in this end open outwardly as well as toward the bore of the barrel, a shell-ejector fitted into this recess, a shank on which it is mounted, a breech-block fitted against the open end of the barrel, a pivot whereby it is mounted in a manner to have a transverse movement with reference to the barrel to open or close the end thereof, an angle-lever supported in the barrel end and engaging the ejector by projecting with one of its ends under the same and means on the adjoining face of the breech-block engaging the other end of this angle-lever whereby motion of this breech-block for opening the barrel operates the ejector.

In testimony whereof I hereunto set my signature in the presence of two witnesses.

PETER F. ZEISE.

Witnesses:

WM. H. BURFORD,
F. G. HUNKER.