

C. G. SWEBILIUS & H. T. R. HANITZ.

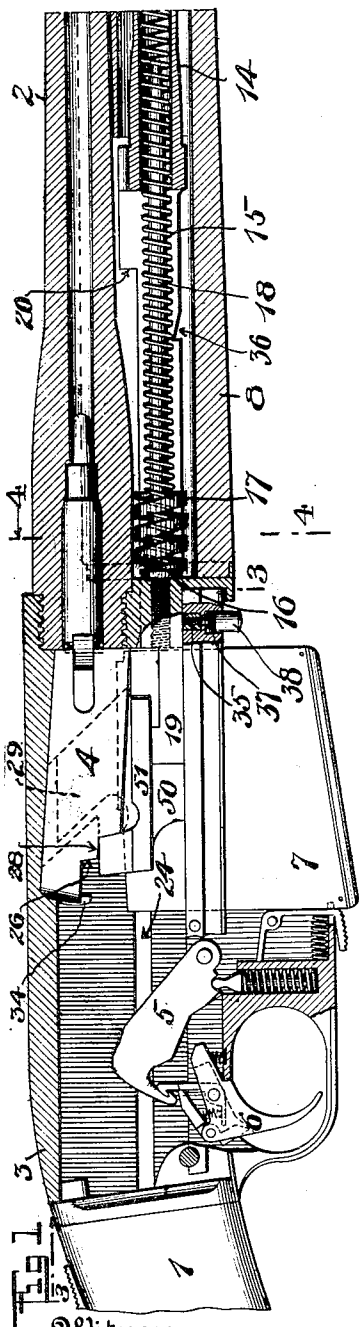
FIREARM.

APPLICATION FILED APR. 2, 1915.

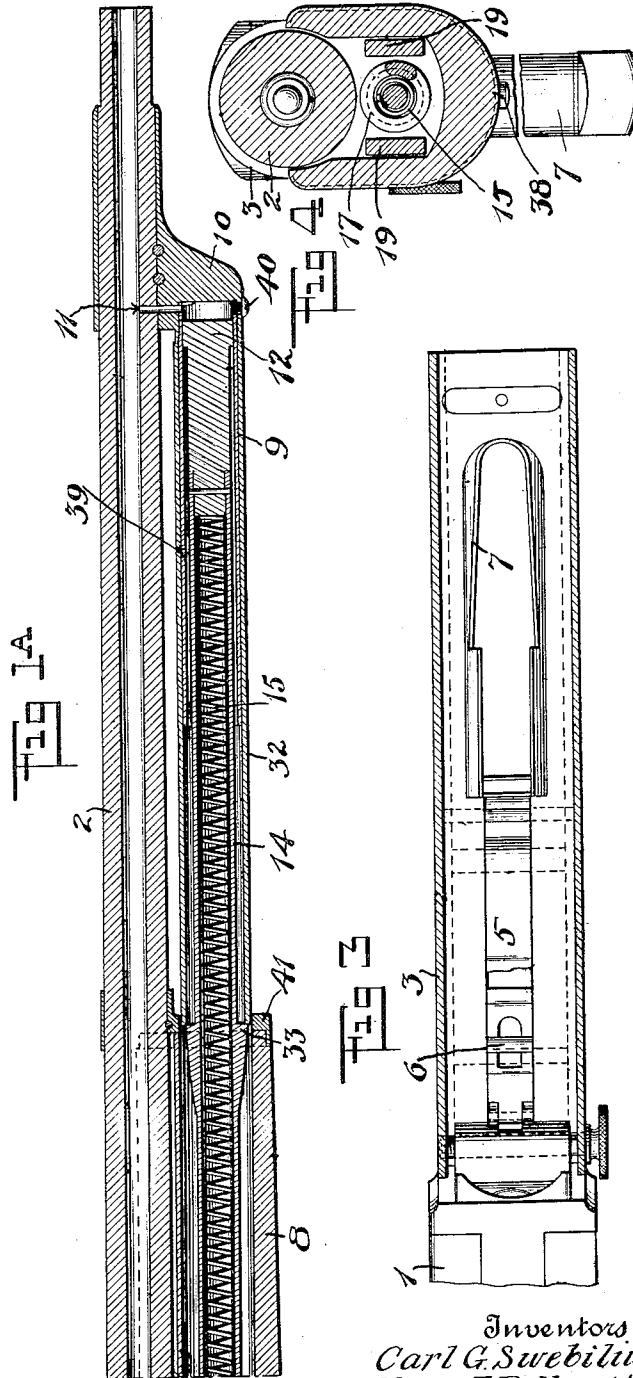
Patented Mar. 28, 1916.

2 SHEETS—SHEET 1.

1,176,873.



Witness
C. J. Hachenberg.



Inventors
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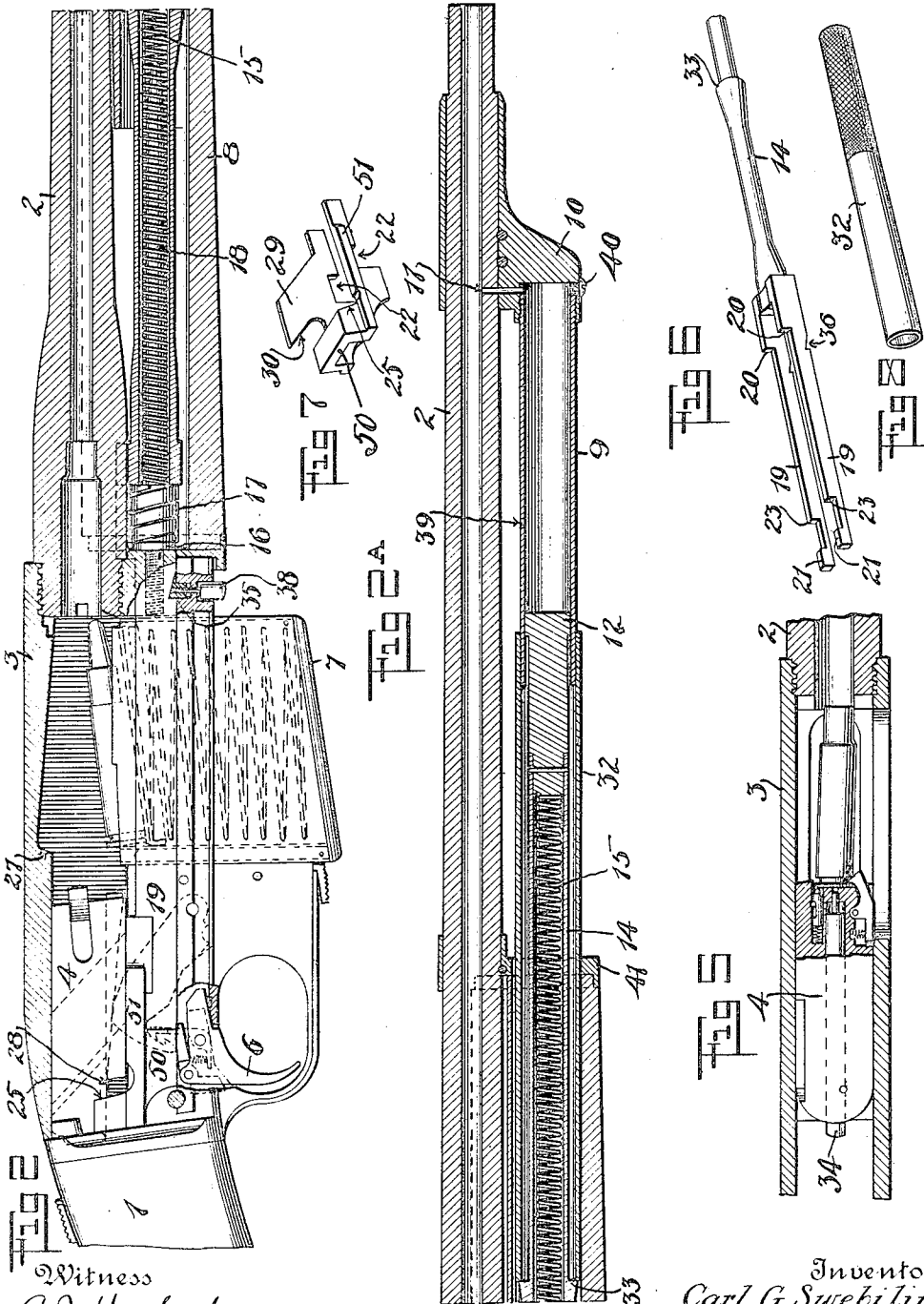
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UNITED STATES PATENT OFFICE.

CARL GUSTAF SWEBILIUS AND HANS T. R. HANITZ, OF NEW HAVEN, CONNECTICUT,
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A CORPORATION OF CONNECTICUT.

FIREARM.

1,176,873.

Specification of Letters Patent.

Patented Mar. 28, 1916.

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To all whom it may concern:

Be it known that we, CARL G. SWEBILIUS and HANS T. R. HANITZ, a citizen of the United States and a subject of the Emperor of Germany, respectively, residing at New Haven, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Firearms, of which the following is a full, clear, and exact description.

Our invention relates to a new and useful automatic or gas operated firearm of the repeating type, the object being to provide novel features of construction and to simplify the form and arrangement of various operating parts with a view to efficiency, accessibility, durability and simplicity.

In the accompanying drawings Figure 1 is a side elevation largely in longitudinal section of the breech portion of our improved firearm, the rear of the stock and the front of the barrel portions being broken away. Fig. 1^a is a longitudinal section of that part of the barrel portion which is broken away from Fig. 1. Fig. 2 is a view similar to Fig. 1 showing the parts in a different position. Fig. 2^a is a view similar to Fig. 1^a showing the parts in a different position. Fig. 3 is a section on the line 3—3 of Fig. 1 relatively enlarged. Fig. 4 is a cross section on the line 4—4 of Fig. 1, said view being relatively enlarged. Fig. 5 is a horizontal longitudinal section of certain details. Fig. 6 is a perspective view of another detail on a reduced scale, the forward end thereof being broken away. Figs. 7 and 8 are perspective view of other details detached.

1 represents the stock portion of the firearm.

2 represents the barrel. Between the barrel and stock portions is the receiver 3 in which is located a breech block 4.

5 is the hammer and 6 the trigger.

7 is the usual box magazine detachably secured to the underside of the breech or receiver and arranged to hold cartridges which are disengaged automatically therefrom one by one in the usual way for the purpose of being introduced into the chamber of the barrel by the breech block 4 at the proper time.

8 is the so-called fore-end arranged under the barrel 2.

9 is a cylinder which is fitted gas tight into a bracket 10 suspended from the barrel 2 near its forward end.

11 is a gas port leading from the bore of the barrel 2 into the forward end of the cylinder 9.

12 is a piston located in the cylinder 9. This piston is provided with a tubular rearward extension 14 which constitutes an action rod.

15 is the action spring which is located within the tubular extension 14 and serves to press the piston 12 forwardly. The rear end of the spring 15 bears against an abutment 16 at the front of the barrel reinforce. 17 is a relatively powerful buffer spring located adjacent to said abutment 16.

18 is a stationary guide pin mounted on the barrel reinforce and projecting into the spring 15 for some distance and serving simply to steady the same. The action rod 14 is provided with a suitable means at its rear end for connection with the breech mechanism. In this instance this connecting means comprises the spaced forked ends 19—19, which pass through suitable openings in the front of the barrel reinforce so that said forked ends will project into the receiver at the opposite sides thereof.

20—20 are stop shoulders which may be provided, if desired, to positively limit the rearward movement of the action rod.

21—21 are lugs on the forked ends 19—19 which detachably engage the opposite sides of what I may term a cam slide 50 shown in detail in Fig. 7, the under side of the cam slide having recesses 22—22 to receive said lugs 21.

23—23 are shoulders against which the forward part of the cam slide engages, so that the said cam slide is, in effect, detachably locked to the action rod 14 and will reciprocate therewith. The cam slide is provided with suitable ribs or extensions 51 which move in longitudinal guide-ways 24 in the inner side walls of the receiver. The breech block rests upon the cam slide and is moved to and fro thereby and is likewise tilted at the proper time into its locking position as shown in Fig. 1, the unlocked position of the breech block being shown in Fig. 2. The cam slide is provided with an incline 25 which engages an incline 26 near the rear end of the breech block when the parts

are unlocked. When the parts are moved ahead to the closed position, this incline connection serves to tilt up the rear end of the breech block from the horizontal plane to the oblique locking position shown in Fig. 1 wherein the rear of the breech block engages a lock-up shoulder 27 in the upper wall of the receiver. The cam slide, when in its extreme forward position, stands under a stop shoulder 28 on the breech block so as to hold the breech block in this locked-up position. When the action rod 14 is moved rearwardly, it first shifts the cam slide rearwardly until it moves beyond the shoulder 28 whereupon the breech block 4 will drop down to its horizontal position, so that it may continue to move rearwardly with the action rod and cam slide to the position indicated in Fig. 2. The cam slide is preferably provided with an upwardly projecting horn 29 which provides a cam incline 30 which engages a corresponding incline 31 on the side of the breech block to guarantee the unseating of the rear end of the breech block from the lock-up shoulder, so that it will drop into the horizontal position when the cam slide is moved rearwardly. It will thus appear that the cam slide partakes of a slight rearward movement before the breech block is carried rearwardly.

Appropriate cartridge extracting means and cartridge ejecting means are provided, but no claim to novelty is made herein therefor.

Any suitable means may be provided for effecting the initial loading of the gun. For example, we may provide a hand operable tube 32 slidably mounted upon the cylinder 9, the rear end of said tube engaging abutment shoulder 33 on the action rod so that by grasping the tube 32 and pulling it rearwardly, the action rod 14 will be moved rearwardly so as to reciprocate the breech block in such a manner that one of the cartridges from the magazine 7 will be released and inserted into the chamber of the barrel passing up between the forked ends 19—19 of the action rod. The rearward movement of the action rod and associated parts cocks the hammer 5. When the gun is fired, the hammer 5 is released by the trigger 6, the former being impelled against the firing pin 34 so as to discharge the loaded shell. When the bullet passes the port 11 in the barrel, some of the gas pressure back of the bullet passes through the port 11 into the cylinder 9 so as to force the piston 12 rearwardly together with the action rod and the aforesaid associated parts to the position shown in Figs. 2 and 2^a, putting the action spring 15 under increased tension. This rearward movement extracts and ejects the empty shell and permits a fresh cartridge to move into position in front of the breech block

to be engaged thereby and forced into the chamber on the forward movement thereof. When the bullet has left the barrel and the gas pressure diminishes, the action spring 15 forces the piston, action rod and associated parts forwardly and into the position shown in Figs. 1 and 1^a so that the gun may again be fired by pulling the trigger, the act of ejecting the empty shell and reloading the gun being automatically effected. If it is desired to hold the breech open at any time this may be accomplished by means of a latch 35 arranged in the barrel reinforce and designed to engage in a notch 36 in the forked portion 19 of the action rod. This latch 35 is normally withdrawn by a spring 37 but may be pressed into operative position by a finger button 38 wherein the latch will frictionally engage the action rod in its rearward position so as to hold the breech open. A very slight rearward movement of the action rod, which may be effected by the manually operable sleeve 32, will cause the latch 35 to become free, thus allowing the action rod to be advanced by the action spring 15. It is preferable, of course, that the sleeve 32 should not be directly connected to the action rod because manifestly the user of the gun would use the sleeve 32 as a hand grip for supporting the forward part of the gun in the act of aiming and firing, and it would be undesirable to have the sleeve 32 automatically reciprocated by the gas pressure simultaneously with the rearward movement of the action rod.

39 is a vent opening in the cylinder 9 which is uncovered by the piston 12 preferably somewhat before it reaches the limit of its rearward excursion, thus relieving the pressure of the gas to the desired extent, said degree of relief being variable by varying the size or location of said vent passage.

40 is a removable screw plug in the cylinder in line with the gas port 11 whereby the said gas port 11 may be readily cleaned by simply removing the screw plug 40 and introducing a suitable tool. The tubular operating handle 32 may have a loose seat on the cylinder 9 so as to be freely guided thereby, while the rear end of said tubular handle may be guided in the fore end bracket 41.

What we claim is:

1. In a repeating firearm, a receiver, a breech-block, a reciprocating cam-slide guided in said receiver and supporting and carrying said breech-block, an action-rod having a forked rear end operatively connected with said cam-slide at opposite sides thereof.

2. In a repeating firearm, a receiver, a breech-block, a reciprocating cam-slide guided in said receiver and supporting and carrying said breech-block, an action-rod having a forked rear end operatively connected with said cam-slide at opposite sides

thereof, gas-operated means for moving said action-rod in one direction, and an action spring for moving the rod in an opposite direction.

3. In a repeating firearm, a receiver, a breech-block, a reciprocating cam-slide guided in said receiver and supporting and carrying said breech-block, an action rod having a forked rear end, operatively connected with said cam-slide at opposite sides thereof, gas-operated means for moving said action-rod in one direction, an action spring for moving the rod in an opposite direction, said action-rod including a handle grip and a loose connection between the rod and said grip and all arranged whereby the rod may be reciprocated by, or independently of, the handle grip.

4. In a repeating firearm, a receiver, including two spaced side walls connected along their upper edges by a solid top wall, a lock-up shoulder in the under side of the top wall, a side ejection opening in one of the side walls, a breech-block movable to and fro within said receiver and tiltable into engagement with said lock-up shoulder, a cam-slide supporting said breech-block and movable to and fro in said receiver, with guide connections between said cam-slide and the receiver, means on said cam-slide for engaging the breech-block to cause it to move to and fro, and means also on said cam-slide to tilt and hold the breech-block in operative engagement with said lock-up shoulder, a forked action rod for moving said cam-slide, a magazine under said receiver arranged to feed cartridges up through the forked end of said rod into position in front of the breech block.

5. In a repeating firearm, a barrel, a receiver, including two spaced side walls connected along their upper edges by a top wall, a lock-up shoulder in the under side of the top wall, a side ejection opening in one of the side walls, a breech-block movable to and fro within said receiver and tiltable into engagement with said lock-up shoulder, a cam-slide supporting said breech-block and movable to and fro in said receiver, with guide connections between said cam-slide and the receiver, means on said cam-slide for engaging the breech-block to cause it to move to and fro, and means also on said cam-slide to tilt and hold the breech-block in operative engagement with said lock-up shoulder, and means for moving said cam-slide comprising a forked action-rod detachably connected with said cam-slide at its opposite sides, said action-rod including a power-operable piston and a manually operable grip, a cylinder surrounding said piston, said cylinder being in communication with the bore of the barrel, an action spring normally operating to press the action-rod forwardly.

6. In a repeating firearm, a barrel, a receiver, including two spaced side walls connected along their upper edges by a top wall, a lock-up shoulder in the under side of the top wall, a side ejection opening in one of the side walls, a breech-block movable to and fro within said receiver and tiltable into engagement with said lock-up shoulder, a cam-slide supporting said breech-block and movable to and fro in said receiver, with guide connections between said cam-slide and the receiver, means on said cam-slide for engaging the breech-block to cause it to move to and fro, and means also on said cam-slide to tilt and hold the breech-block in operative engagement with said lock-up shoulder, and means for moving said cam-slide comprising an action-rod detachably connected with said cam-slide at the side thereof, said action-rod including a power-operable piston and a manually operable grip, a cylinder surrounding said piston, said cylinder being in communication with the bore of the barrel, an action spring normally operating to press the action-rod forwardly, the action-rod being movable independently of the grip portion, and a magazine at the underside of the receiver arranged to feed cartridges past the action rod and up into position in front of the breech block.

7. In an automatic firearm, a receiver, a breech mechanism movable therein including a breech-block, a barrel extending forwardly from the receiver, a cylinder arranged under the barrel and a gas port connecting the bore of the barrel with the interior of said cylinder, an action-rod leading from said piston rearwardly with a forked rear end entering said receiver and connecting the piston with the breech mechanism, part of said action-rod being tubular, an action spring contained within said tubular action rod and arranged to press the action-rod and piston forwardly in said cylinder.

8. In an automatic firearm, a receiver, breech mechanism movable therein including a breech-block, a barrel extending forwardly from the receiver, a cylinder arranged under the barrel and a gas port connecting the bore of the barrel with the interior of said cylinder, an action-rod leading from said piston rearwardly with means for connecting the same with the breech mechanism, part of said action-rod being tubular, an action spring contained within said tubular action-rod and arranged to press the action-rod and piston forwardly in said cylinder, a yielding buffer arranged to contact with said action-rod and surrounding said action spring.

9. In an automatic firearm, a receiver, breech mechanism movable therein including a breech-block, a barrel extending for-

wardly from the receiver, a cylinder arranged under the barrel and a gas port connecting the bore of the barrel with the interior of said cylinder, an action-rod leading
 5 from said piston rearwardly with means for connecting the same with the breech mechanism, part of said action-rod being tubular, an action spring contained within said tubular
 10 action-rod and arranged to press the action-rod and piston forwardly in said cylinder, and a buffer forward of the receiver for limiting the rearward movement of the action-rod, said buffer comprising a heavy
 15 spiral spring surrounding said action rod and through which said rod moves.

10. In an automatic firearm, a receiver, breech mechanism movable therein including a breech-block, a barrel extending forwardly from the receiver, a cylinder arranged under the barrel, and a gas port
 20 connecting the bore of the barrel with the interior of said cylinder, an action-rod leading from said piston rearwardly with means for connecting the same with the breech
 25 mechanism, part of said action-rod being tubular, an action spring extending into said tubular action-rod and arranged to press the action-rod and piston forwardly in said cylinder, a yielding spiral spring buffer
 30 arranged to co-act with said action-rod and loosely surrounding the latter, and a stop for limiting the rearward movement of the action-rod.

11. In an automatic gas-operated firearm, a receiver, a barrel projecting forwardly
 35 therefrom, breech mechanism including a breech-block movable in the receiver, a tubular action-rod having a forked rear portion extending into the receiver with means for
 40 operatively connecting the forked portion with said breech mechanism, a piston operatively connected with the outer end of the action-rod, a cylinder for said piston, said cylinder being connected to the barrel, the
 45 interior of the cylinder being in communication with the bore of the barrel, an action spring extending into the tubular part of the action-rod, and a guide pin carried by the receiver between the forked portion of
 50 the rod, and an action spring supported partly on said pin and partly in said rod.

12. In an automatic gas-operated firearm, a receiver, a barrel projecting forwardly
 55 therefrom, breech mechanism including a breech-block movable in the receiver, an action-rod having a forked rear portion extending into the receiver, means for operatively connecting the forked portion with said breech mechanism, the forward part of
 60 the action-rod being tubular, a piston operatively connected with the action-rod, a cylinder for said piston, said cylinder being connected to the barrel, the interior of the cylinder being in communication with the
 65 bore of the barrel, an action spring extend-

ing into the tubular part of the action-rod, the forward part of said spring being guided partially thereby, and a guide pin for the rear part of said spring, said pin being carried by said receiver and being of
 70 sufficient length to support that part of the spring located between the fork when the rod is advanced.

13. In an automatic gas-operated firearm, a receiver, a barrel projecting forwardly
 75 therefrom, breech mechanism including a breech-block movable in the receiver, an action-rod having a forked rear portion extending into the receiver, with means for operatively connecting the forked portion with
 80 said breech mechanism, the forward part of the action-rod being tubular, a piston operatively connected with the action-rod, a cylinder for said piston, said cylinder being connected to the barrel, the interior of the
 85 cylinder being in communication with the bore of the barrel, an action spring extending into the tubular part of the action-rod, and being guided partially thereby, and separate guide means for the rear part of the
 90 action spring, said guide means comprising a pin projecting forwardly from the receiver and into the spring and being of sufficient length to support the latter when the action rod is advanced.
 95

14. In an automatic repeating firearm, a receiver, a barrel projecting forwardly there-
 100 from, movable breech mechanism within the receiver, a gas cylinder carried by the barrel and in communication with the bore thereof, a piston in said cylinder, an action-rod leading rearwardly from the piston, the main
 105 body of the action-rod being tubular, an action spring extending into the tubular action-rod, a tubular grip slidably mounted on said cylinder in line with the action-rod, and loosely connected to the action-rod whereby said action-rod may be moved by the rearward movement of the tubular grip, and whereby said action-rod may be moved
 110 rearwardly independently of said grip, and means of connection between the action-rod and the breech mechanism.

15. In an automatic repeating firearm, a receiver, a barrel projecting forwardly there-
 115 from, breech mechanism within the receiver, a cylinder suspended from the barrel and having a gas port leading from the forward part thereof into the bore of said barrel, a piston in said cylinder, an action-rod leading rearwardly from the piston, with a
 120 forked rear end for operatively connecting the same with the breech mechanism within the receiver, a tubular grip slidably mounted on the cylinder, an abutment on the action-rod arranged to be engaged by said grip, whereby the action-rod may be moved rearwardly by said grip, and whereby said action-rod may move rearwardly independent
 125 of the grip, a spring operating to advance

the piston and associated parts, a hold-back latch, a relatively stationary mounting therefor, a shoulder on the action-rod arranged to be engaged at will by said hold-back latch.

5 16. In an automatic repeating firearm, a receiver, a barrel projecting forwardly therefrom, breech mechanism within the receiver, a cylinder suspended from the barrel and having a gas port leading from the forward
10 part thereof into the bore of said barrel, a piston in said cylinder, an action-rod leading rearwardly from the piston, with a forked rear end for operatively connecting the same with the breech mechanism within

the receiver, a tubular grip slidably mounted 15 on the cylinder, an abutment on the action-rod arranged to be engaged by said grip, whereby the action-rod may be moved rearwardly by said grip, a hold-back latch, a relatively stationary mounting therefor, a 20 shoulder on the action-rod arranged to be engaged at will by said hold-back latch.

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