

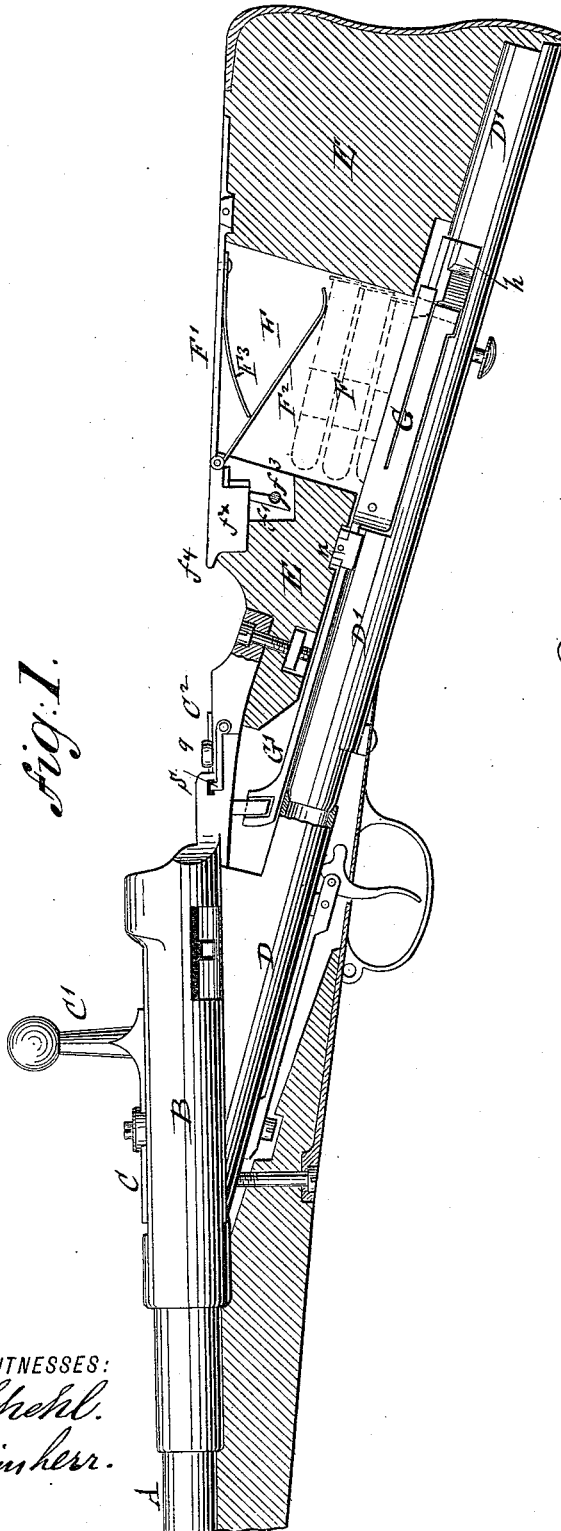
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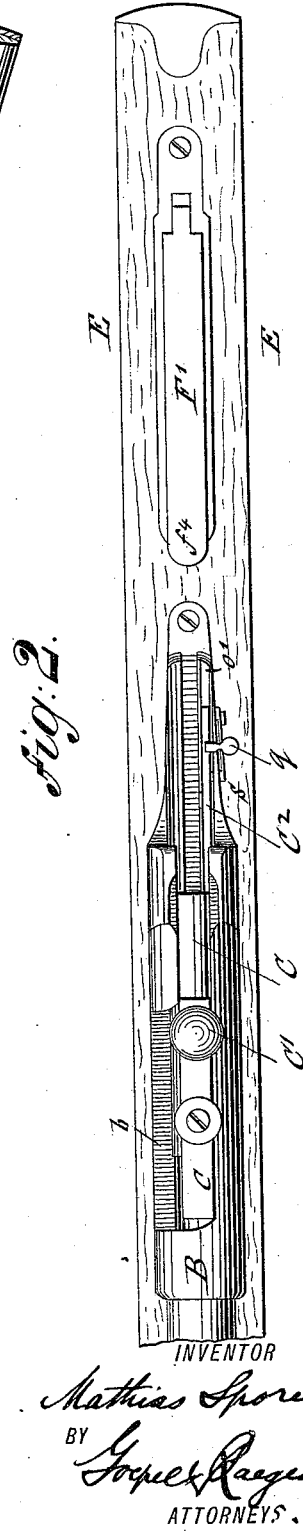
M. SPORER.
MAGAZINE FIRE ARM.

No. 423,453.

Patented Mar. 18, 1890.



WITNESSES:
A. Schohl.
Meinherr.

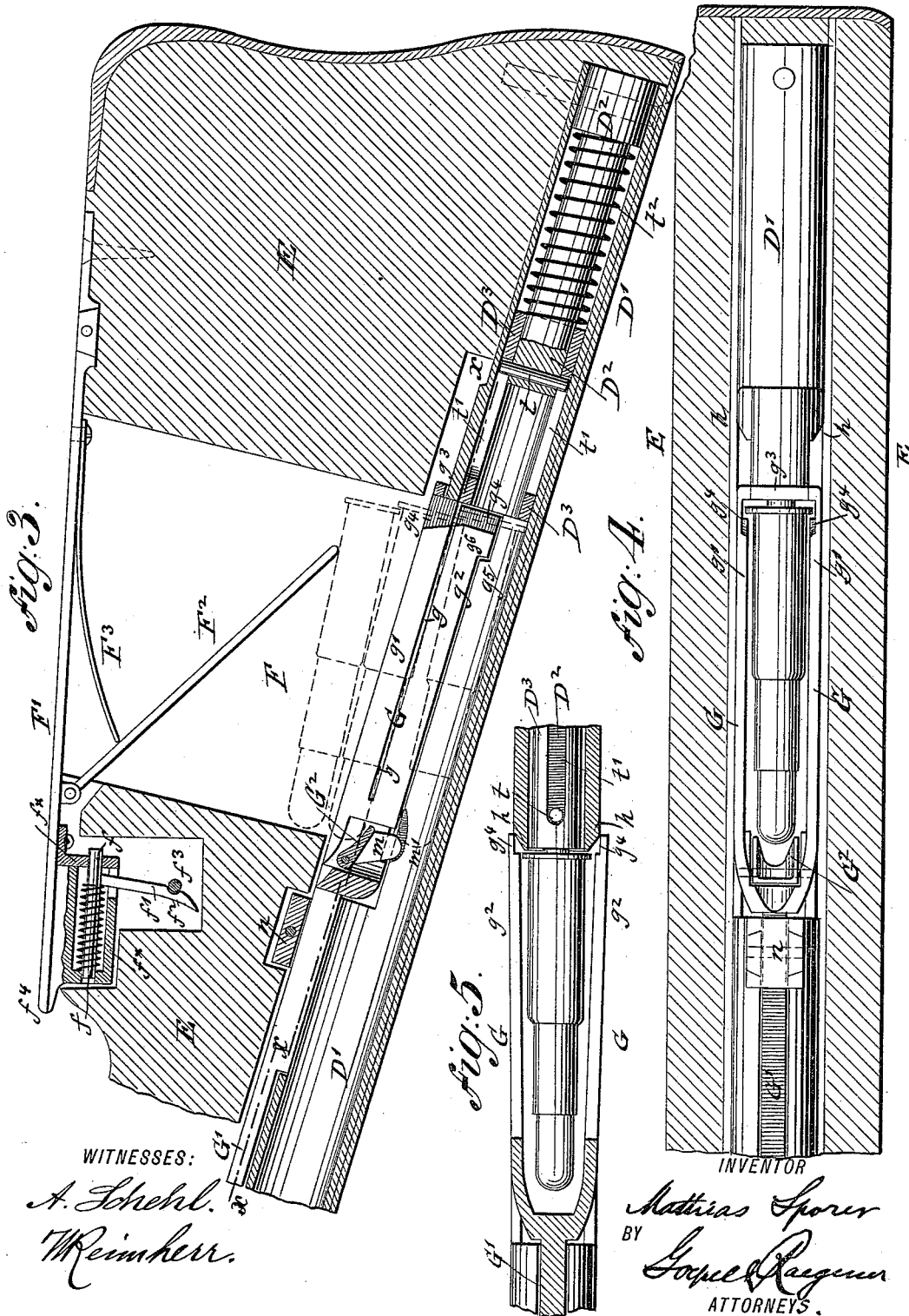


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4 Sheets—Sheet 2.

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4 Sheets—Sheet 3.

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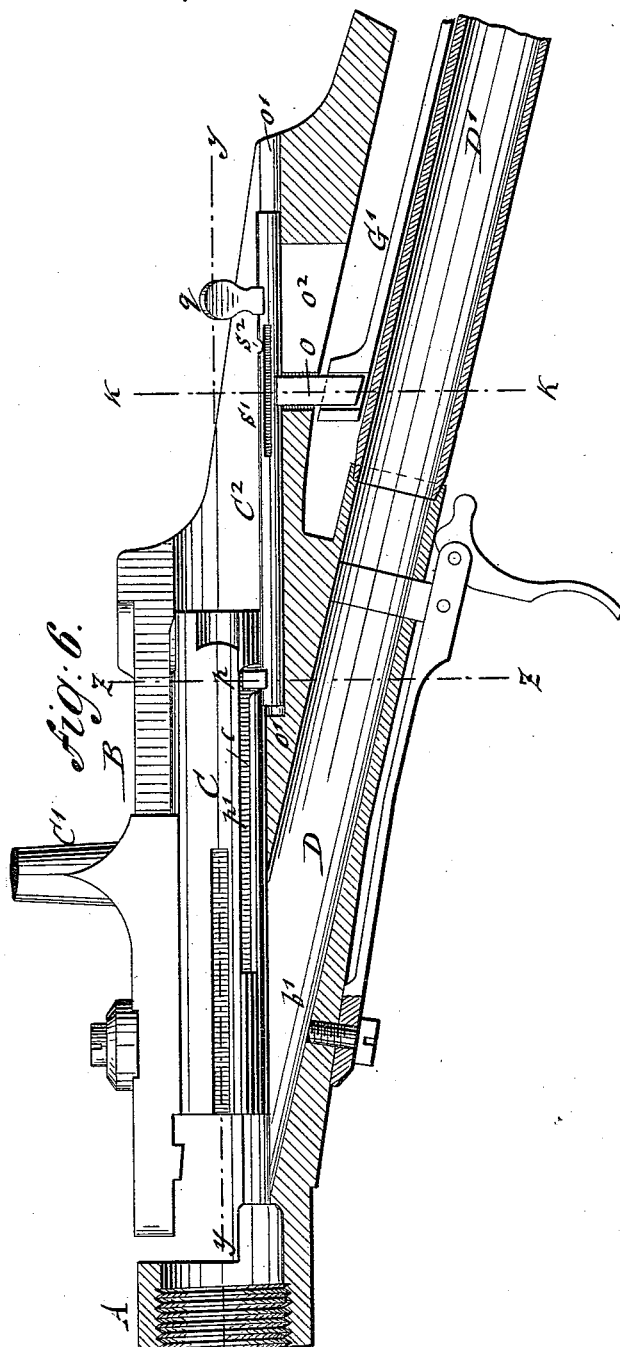
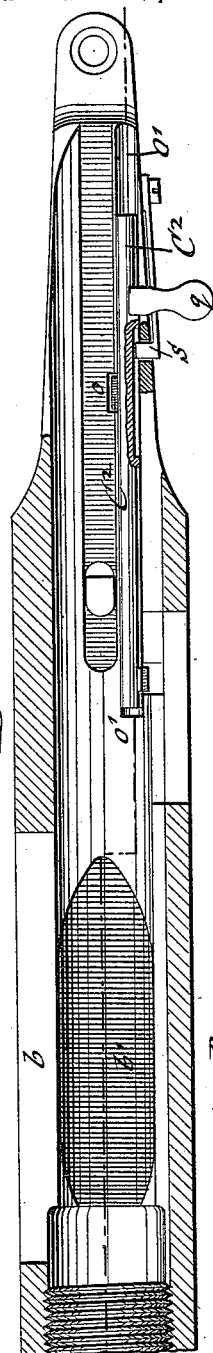


Fig. 6.

Fig. 7.



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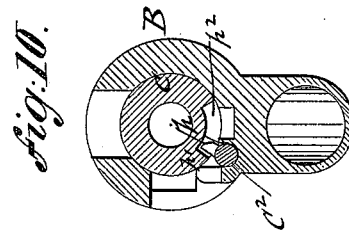
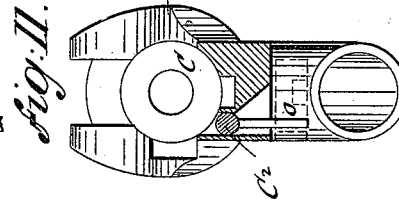
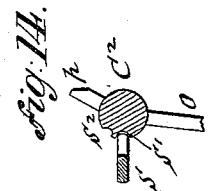
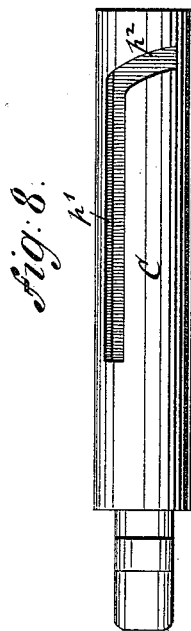
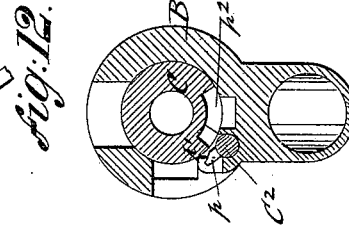
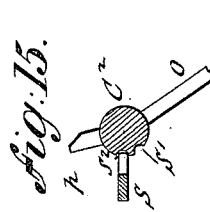
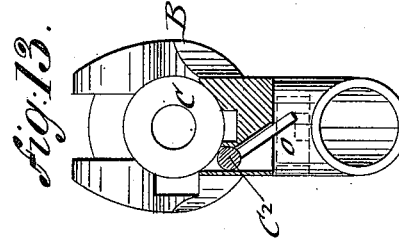
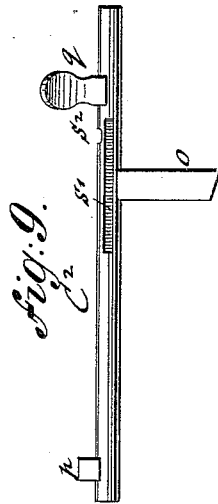
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UNITED STATES PATENT OFFICE.

MATHIAS SPORER, OF HARTFORD, CONNECTICUT.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 423,453, dated March 18, 1890.

Application filed August 15, 1889. Serial No. 320,834. (No model.)

To all whom it may concern:

Be it known that I, MATHIAS SPORER, of Hartford, county of Hartford, and State of Connecticut, a citizen of the United States, have
5 invented certain new and useful Improvements in Magazine Fire-Arms, of which the following is a specification.

The object of my present invention is to so improve the magazine fire-arm for which Letters Patent were granted to me, No. 320,186,
10 dated June 16, 1885, that the construction of the cartridge-feeding mechanism is simplified and rendered more effective, that the cartridges are conveyed from the magazine located in the butt in a more reliable manner
15 to the cartridge-feeding mechanism, and that the connection of the breech-bolt with the cartridge-feeding mechanism is simplified and rendered more effective, so that the fire-arm
20 can be quickly changed from magazine firing to single firing, and vice-versa.

The invention consists, first, in the improved construction of the cartridge-feeding mechanism by which the cartridges are transferred from the magazine to the receiver back
25 of the breech; secondly, in the arrangement of a spring-actuated follower in the magazine located in the butt, by which the cartridges are fed in a reliable manner to the cartridge-feeding mechanism, and, thirdly, in the connection of the cartridge-feeding mechanism with the sliding breech-bolt, as will be fully described hereinafter, and finally pointed out
30 in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved magazine fire-arm, partly in vertical longitudinal section. Fig. 2 is a top view of the same. Fig. 3 is a vertical longitudinal section of the butt, showing the magazine and the cartridge-feeding mechanism drawn on a larger scale. Fig. 4 is a top view of the cartridge-feeding mechanism. Fig. 5 is a horizontal section on line *x x*, Fig. 3, showing the cartridge-carrier and the mechanism by which the cartridge is released and transferred to the receiver. Fig. 6 is a vertical longitudinal section, drawn on a larger scale, of the breech, showing the breech-bolt in side elevation. Fig. 7 is a horizontal section on line *y y*, Fig. 6, the breech-bolt being removed and showing the coupling
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piece by which the connection of the breech-bolt with the cartridge-feeding device is established; and Figs. 8 and 9 are a detail bottom view of the breech-bolt and a side view
55 of the coupling piece by which the connection of the breech-bolt and the slide-rod of the cartridge-feeding mechanism is made. Figs. 10, 11, 12, 13, 14, and 15 are vertical transverse sections, respectively, on lines *z z* and *k k*,
60 Fig. 6, showing the different positions of the coupling-piece and its retaining-spring, according as the breech-bolt is set for magazine or single firing.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the barrel, B the receiver at the breech of the same, and C the sliding breech-bolt, which is accurately fitted to the breech of the barrel.
70 The breech-bolt C is guided in the receiver and operated by means of a hand-lever C' in the usual manner.

The breech-bolt C is made of any well-known and approved construction, and provided with a firing-pin and cartridge-shell extractor, as customary in breech-bolts of this class.

The receiver B is provided with a side opening *b* and a bottom opening *b'*, the former being used for inserting the cartridges for single firing, while the latter is used for feeding the cartridges from the magazine to the receiver. The bottom opening *b'* is connected by an inclined well D with an inclined
85 tubular channel D', that extends in backward direction along the bottom part of the stock into the butt E and through the entire length of the same, as shown in Fig. 1.

A magazine F is arranged in the butt E, and is of such size that six or more cartridges, according to the size of the same, can be placed into the magazine. The lower part of the magazine communicates with an opening in the tubular channel D', so that
95 the cartridges can be conveyed successively from the magazine into the same. The top part of the magazine F is closed by means of a hinged lid F', which is retained in closed position by a locking device formed of a
100 keeper *f^x* and a sliding and spring-actuated bolt *f*, guided in said keeper and having

a downwardly-extending arm f' , which is curved at the lower end and provided with a notch f^2 , that engages a transverse pin f^3 in the butt E. The lid F' is provided with a forwardly-extending heel f^4 , that extends over the butt and serves for being taken hold of by the fingers in opening the magazine. A lifting pressure exerted by the finger on the lid F' causes the release of the notched locking-arm f' from the transverse pin f^3 and permits the lid to be swung on its pivot into backward direction over the butt, so as to open the magazine and permit the refilling of the same with a new set of cartridges. To the under side of the lid F' is hinged, near the front part of the magazine, a follower F^2 , which is pressed in downward direction by a spring F^3 , so as to press on the cartridges and produce the regular downward feeding of the same through the opening in the tubular channel D' into the cartridge-carrier located below the magazine.

The cartridge-carrier G is connected by a slide-rod G' , having a recessed front end, with the breech-bolt C , and coupled to or uncoupled from the same by means of an axially-turning coupling-piece C^2 , so that the reciprocating motion which is imparted to the breech-bolt imparts at the same time a reciprocating motion to the cartridge-carrier G .

The cartridge-carrier G corresponds in its general shape to the shape of the cartridge and is formed of an open frame, the side walls of which are each provided with a longitudinal slit g , that divides the side walls of the carrier into two longitudinal parts g' g^2 , of which the upper parts g' are connected by a transverse bridge g^3 , as shown clearly in Figs. 3 and 4. The lower parts g^2 are not connected at their rear ends, and have therefore a certain lateral spring action. The rear ends of the upper and lower parts g' g^2 of the carrier G are provided at the inner sides with recesses g^4 for the rims of the cartridges, the forward edges of the recesses of the upper parts g' being inclined, so as to guide the rim of the cartridges into the recesses of the lower parts g^2 , as shown in dotted lines in Fig. 3. The carrier G is guided on the side walls of the tubular channel D' , said side walls having a shoulder g^5 , which forms, with the downwardly-projecting shoulder g^6 of the lower parts g^2 of the carrier G , stop devices for the carrier. The transverse bridge g^3 of the upper parts g' of the carrier G is guided on the top part of the tubular shell D' , a recess being provided for this purpose in the butt, as shown in Fig. 3. In the rear wall of the channel D' is secured a fixed guide-bolt D^2 , which guide-bolt has a stop-pin t at its front end, said stop-pin serving to engage longitudinal slots t' of a sleeve D^3 , that is guided on the bolt D^2 and moved in forward direction by a strong spiral spring t^2 , which is interposed between the sleeve D^3 and a shoulder at the rear end of the fixed guide-bolt D^2 . The guide-sleeve D^3 is steadily guided in the

space between the fixed bolt D^2 and the surrounding rear part of the tubular shell D' . The cartridge, which is conveyed from the magazine through the opening of the tubular channel D' into the carrier G , rests by its rimmed end against the sleeve D^3 and is engaged at the rim by the shoulders of the recesses g^4 of the side walls g^2 and moved against the counter-pressure of the springs t' of the guide-sleeve D^3 in backward direction with the carrier in following the backward motion of the breech-bolt C . The carrier G moves along the recessed side walls of the tubular channel D' until the rear ends of the lower parts g^2 abut against the beveled cheeks h at the sides of the tubular sleeve D' , which cheeks tend to spread the ends of the parts g^2 in lateral direction, as shown in Fig. 5, so that the recessed rear ends of the same release the rim of the cartridge and permit, by the simultaneous forward motion of the spring-actuated guide-sleeve D^3 , the quick forward shooting of the cartridge, which is thereby propelled through the channel D' and inclined well E into the receiver B and into line with the breech-bolt C , and then transferred by the forward motion of the latter into the breech of the barrel. This action takes place at the end of the backward stroke of the breech-bolt, as at that moment the cartridge-carrier arrives at the end of its backward motion, so that the lower spring parts g^2 of the same abut against the beveled cheeks h of the tubular shell D' , and are spread apart, so as to produce the release of the cartridge and the forward propulsion of the same by the quick forward motion of the spring-actuated guide-sleeve D^3 .

The front end of the cartridge-carrier G is provided with a dishing guard-piece G^2 , that is pivoted to the carrier G and provided at one side with a downwardly-extending lug m , that drops into a recess m' in the side wall of the tubular channel D' when the carrier is in its normal position of rest, as shown in Fig. 3. During the backward motion of the carrier G the guard-piece G^2 is lifted so as to exert a lifting action on the front end of the cartridge resting on the guard-piece, so as to retain the cartridge in connection with the inclined front edges of the recesses g^4 of the upper parts g' and prevent it from interfering with the cartridge in the carrier during the forward shooting of the latter after it is released from the carrier. This lifting of the cartridge takes place against the downward pressure of the follower, and holds thereby the cartridge next above the one in the carrier in position, while securing the reliable feeding of one cartridge after the other into the carrier G and the well of the channel D' . The carrier G is either made in one piece with the connecting slide-rod G' or connected thereto in suitable manner, said slide-rod being guided along the top of the channel D' , in connection with a fixed transverse bridge or keeper n , that is dovetailed across the top re-

cessed part of the channel D' in front of its well below the magazine, as shown clearly in Figs. 1, 3, and 4. The connecting-rod G' is thereby guided steadily and reliably, which is necessary for the proper backward and forward motion of the carrier.

The front end of the slide-rod G' is recessed and engaged by a downwardly-extending arm *o* of the coupling-piece C², by which the connection of the breech-bolt C with the slide-rod G' is made. The coupling-piece C² is clearly shown in Figs. 6 and 7, and in detail in Fig. 9. It is guided in a longitudinal groove *o'* of the receiver B, while the arm *o* is guided in a longitudinal slot *o''* of the stock. At the front end of the coupling-piece C² is arranged a lug *p*, which engages a longitudinal groove *p'* of the breech-bolt C, said groove having a curved rear end *p''*, that is guided along the lug *p* when the breech-bolt is turned on its axis in closing the breech. When the breech-bolt is moved back to such an extent that the forward end of the longitudinal groove *p'* abuts against the lug *p*, the coupling-piece C² is carried along by the breech-bolt C, and thereby the cartridge-carrier moved backward to the same extent until the cartridge is released and transferred into the receiver B. The coupling-piece C² is provided with a handle *q*, by which the same can be turned on its axis, in the recess of the receiver B. To prevent the accidental turning of the coupling-piece C², a locking-spring *s* is arranged, which engages a longitudinal groove *s'* of the coupling-piece C², as shown clearly in Fig. 7. A notch *s''* of the coupling-piece C² sidewise of the rear part of the groove *s'* serves to lock the coupling-piece C² after the same has been turned on its axis, as shown in detail in Figs. 14 and 15.

When it is desired to use the fire-arm for single firing, the coupling-piece C² is moved out of engagement with the groove *p'* of the breech-bolt C, which is accomplished by pressing the handle *q* sidewise, so as to turn the coupling-piece C² on its axis. This throws the locking-pin *s* into engagement with the notch *s''*, as shown in Fig. 15, and disengages thereby the coupling-piece C² from the breech-bolt C, as well as from the recessed end of the connecting-rod G' of the carrier G, as shown in Figs. 12 and 13.

When magazine firing is required, the coupling-piece C² is moved back into the position shown in Fig. 14 by pressing again on the handle *q*, so that its front lug *p* engages again the groove *p'* of the breech-bolt C and its downwardly-extending arm *o* the recessed front end of the slide-rod G', as shown, respectively, in Figs. 10, 11, and 14. The locking-spring *s* then engages the longitudinal groove *s'* and keeps the coupling-piece in proper position for keeping up the connection between the breech-bolt and cartridge-carrier. For single firing, the fire-arm is used in the ordinary manner, the cartridge being

inserted through the side opening *b* into the receiver and moved into the breech by the forward and locking motion of the breech-bolt.

In magazine firing the connection between the breech-bolt and cartridge-carrier is established, so that the cartridges are fed successively by the cartridge-impelling mechanism into the receiver until the magazine is exhausted. As soon as the magazine is empty the magazine is refilled by transferring a new set of cartridges into the same.

The advantages of my improved construction, as compared to the construction shown in my prior patent, are that the cartridge-feeding mechanism is considerably simplified, and thereby rendered more reliable; secondly, that the supply of cartridges from the magazine to the cartridge-carrier is more reliable and effective; thirdly, that the lid of the magazine can be opened and closed with greater facility, and, lastly, that the connection of the cartridge-feeding mechanism with the breech-bolt is rendered simpler and more effective.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a magazine fire-arm, the combination of a reciprocating breech-bolt, a receiver having an inclined well, a tubular channel extending from the well to the rear part of the butt, a magazine located in the butt and communicating with said channel, a cartridge-carrier guided on the side walls of the channel and having longitudinally-slotted side walls, a spring-actuated sleeve back of said carrier, a slide-rod connecting the front end of the carrier with the breech-bolt, and a coupling-piece by which the slide-rod is connected with or disconnected from the breech-bolt, substantially as set forth.

2. In a magazine fire-arm, the combination of a magazine in the butt, a tubular channel having an opening communicating with the magazine, a cartridge-carrier guided on the side walls of the tubular channel and provided with longitudinal slits in its side walls, forming upper and lower parts, a bridge for the upper parts of the side walls, a spring-actuated sleeve back of the carrier, and fixed inclined cheeks or abutments in line with the lower parts of the carrier, whereby said lower parts are spread apart for releasing the cartridge and subjecting it to the propelling action of the sleeve, substantially as set forth.

3. In a magazine fire-arm, a cartridge-carrier for transmitting the cartridges from the magazine to the receiver, said carrier being provided with longitudinally-slitted side walls, a transverse bridge connecting the upper parts of the side walls and with recesses at the inner rear ends of the upper and lower parts, substantially as set forth.

4. In a magazine fire-arm, the combination of a cartridge-carrier guided on the side walls of the tubular channel and provided with

longitudinally-slitted side walls, intermediate mechanism connecting the carrier with the breech-bolt, a pivoted guard-piece at the front end of the carrier, said guard-piece being provided with a lug adapted to engage a depression in the side wall of the channel, while the rear ends of the side walls of the carrier are recessed and provided with inclined shoulders for separating the cartridge in the magazine from the cartridge in the carrier, substantially as set forth.

5. In a magazine fire-arm, the combination of the magazine located in the butt, a tubular channel communicating with the magazine and extending from the same to the receiver, a cartridge-carrier guided on the side walls of the tubular channel and having longitudinally-slitted side walls with laterally-spreading lower parts, a spring-actuated guide-sleeve abutting against the rear end of the carrier, and fixed and beveled cheeks or abutments back of the carrier for spreading the lower parts of the carrier and releasing the cartridge and subjecting it to the action of the guide-sleeve, substantially as set forth.

6. The combination, in a magazine fire-arm, of a magazine, a hinged lid therefor, a follower hinged to the under side of said lid opposite the front end of the magazine and projecting thereinto, and a spring-plate fixed at its rear end to the under side of said lid opposite the rear end of the magazine, the free front end of said spring being inclined downward and forming contact with said follower and being adapted to fold up into contact with said lid under the action of the follower when the magazine is filled.

7. In a magazine fire-arm, the combination, with a magazine in the butt, of a hinged lid having a projecting heel at the front end, a guided and spring-actuated slide-bolt below said heel, said slide-bolt having a downwardly-extending and notched arm, and a transverse

pin engaged by said notched arm for locking the lid, substantially as set forth.

8. In a magazine fire-arm, the combination, with a reciprocating breech-bolt, a receiver having an inclined well, a tubular channel extending from the well into the butt, a magazine in the butt communicating with said channel, a cartridge-carrier guided on the tubular channel below the magazine, a spring-actuated guide-sleeve, fixed and beveled abutments for releasing the side walls of the cartridge-carrier from the rim of the cartridge, a slide-rod extending from the cartridge to the breech-bolt, and a coupling-piece having a lug for engaging the breech-bolt and a downwardly-extending arm for engaging the recessed front end of the slide-rod, substantially as set forth.

9. The combination of the receiver B, the reciprocating breech-bolt C, the coupling-piece C², adapted to engage the breech bolt and connecting slide-bolt of the cartridge-carrier, and a spring-lock for retaining the coupling-piece in or out of connection with the breech-bolt, substantially as set forth.

10. The combination of the receiver B, the reciprocating breech-bolt C, having a longitudinal groove $p'p^2$, the coupling-piece C², having a lug p for engaging the groove, $p'p^2$, a handle q and a downwardly-extending arm o for engaging the slide-rod of the cartridge-carrier, a locking-spring s , which engages, respectively, a groove s' or a notch s^2 of the coupling-piece, so as to retain the same either in or out of engagement with the breech-bolt, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

MATHIAS SPORER.

Witnesses:

S. H. CURTISS,
J. K. LANMANN.