Aug. 14, 1923. 1,464,864

J. M. BROWNING

FIREARM

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Fig. 1.

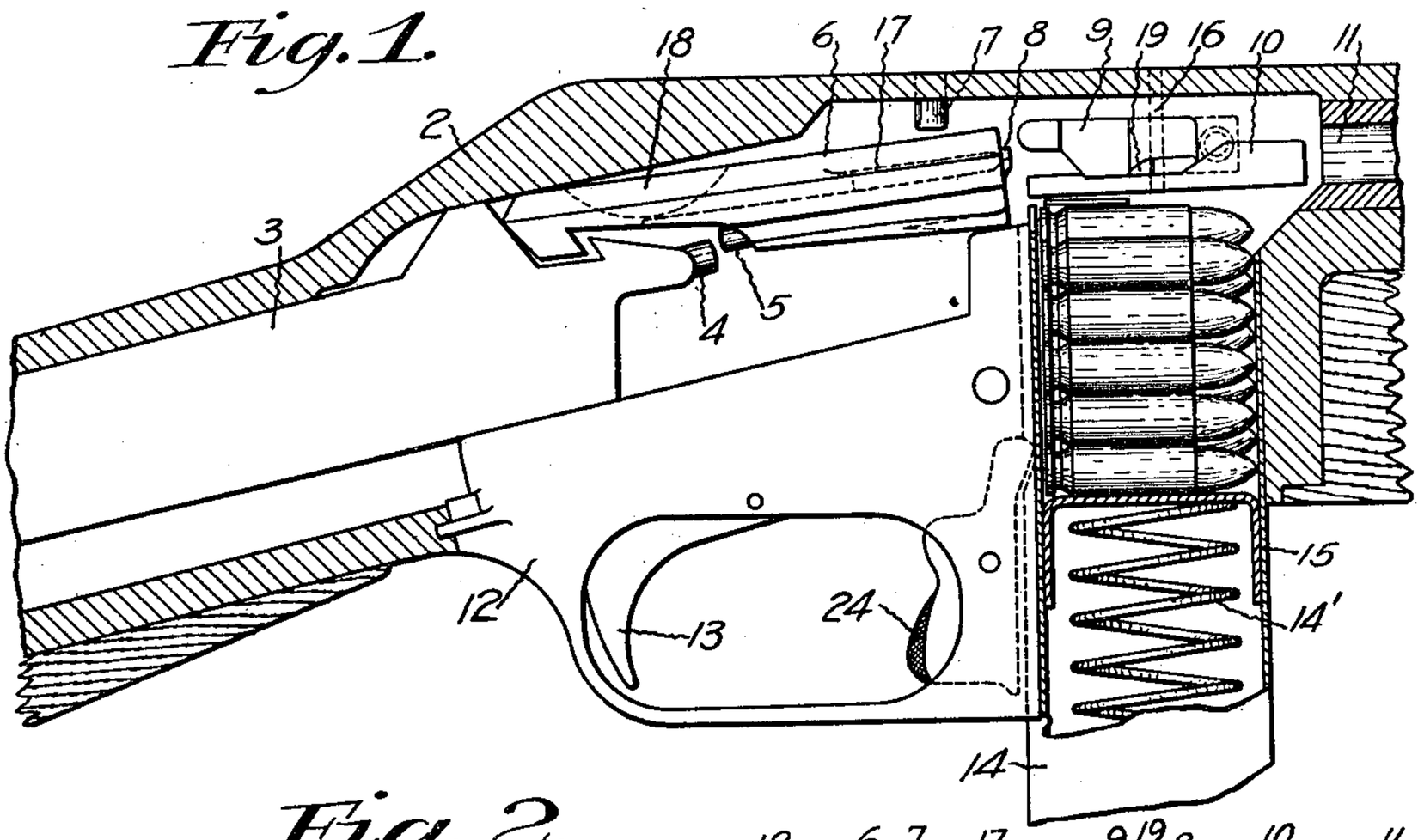


Fig. 2.

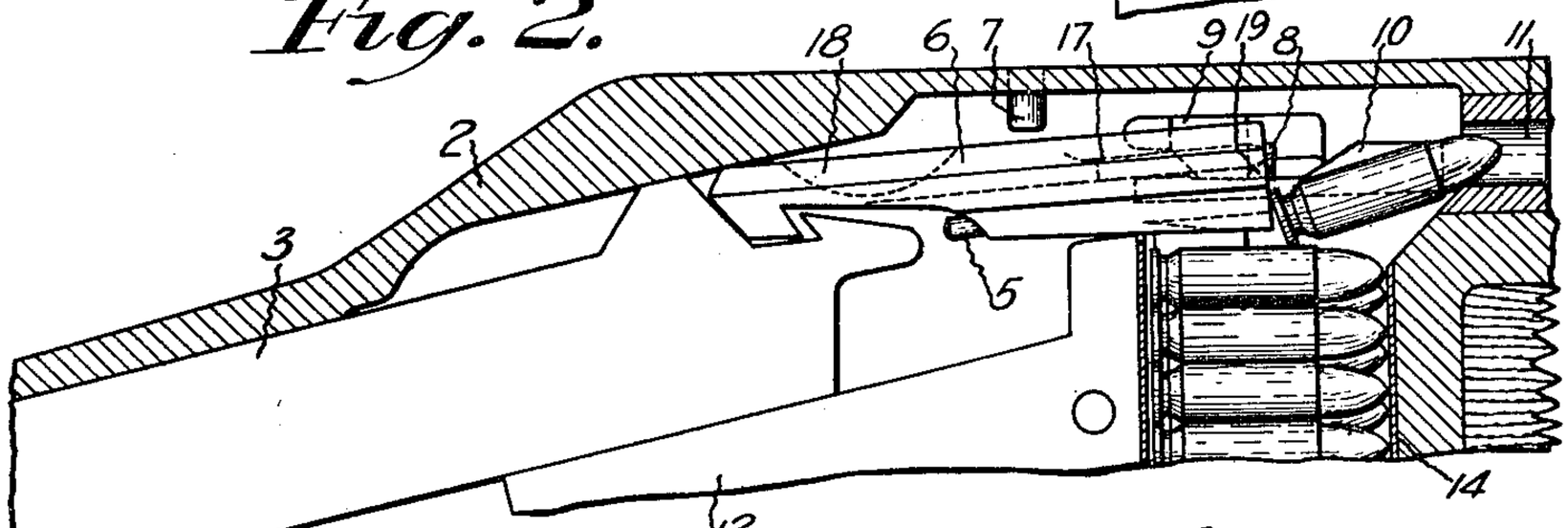


Fig. 3.

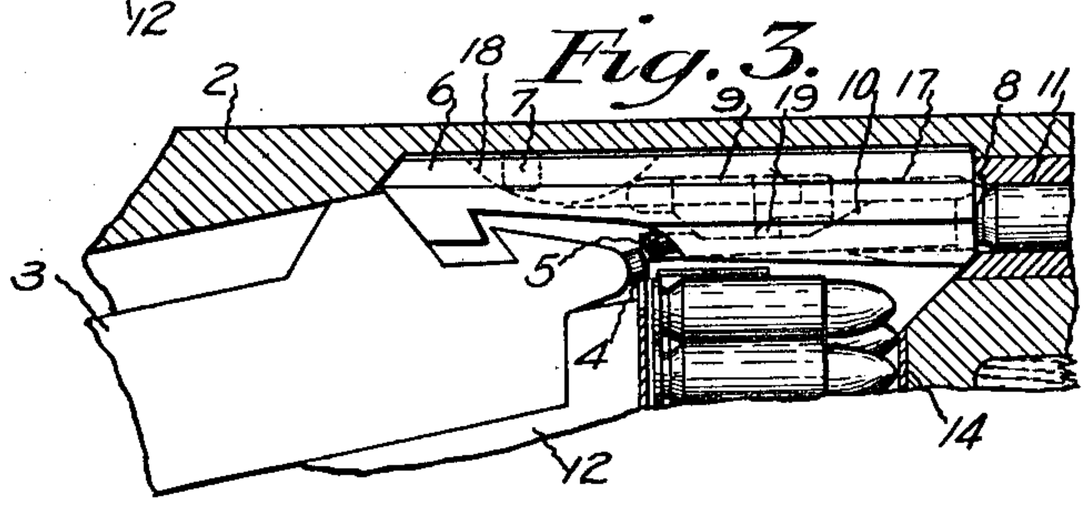
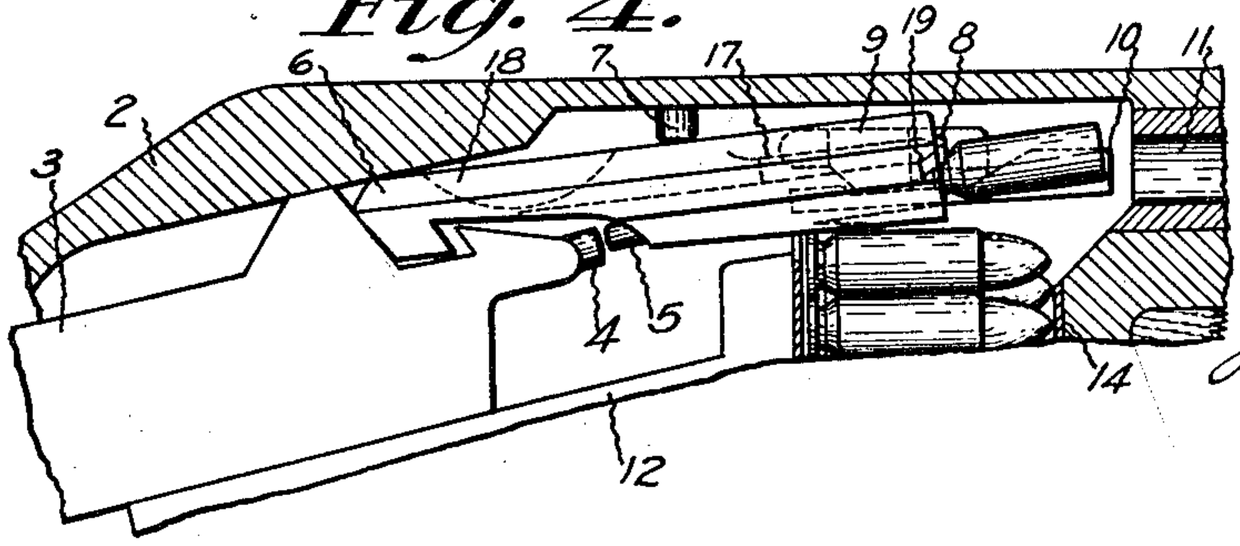


Fig. 4.



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ATTORNEY

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FIREARM

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Fig. 5.

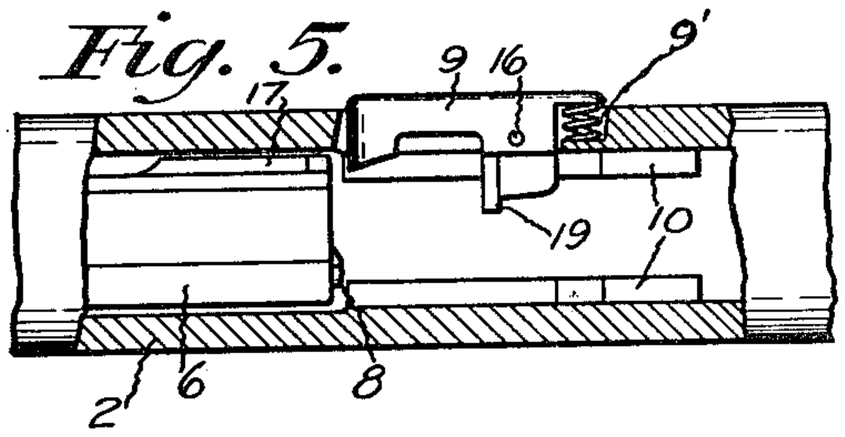


Fig. 7.

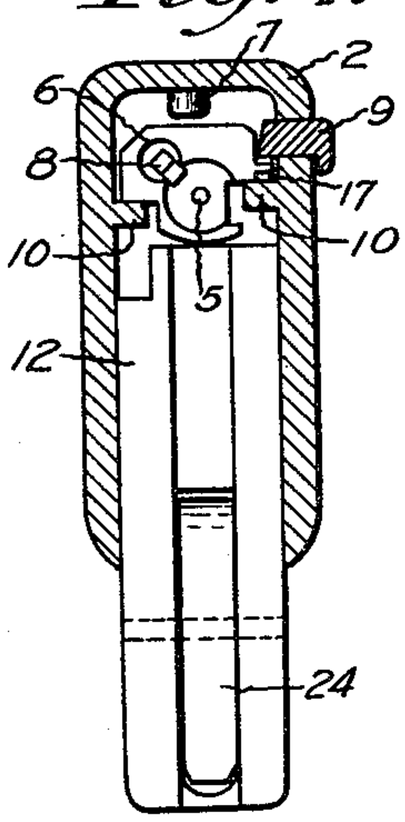


Fig. 6.

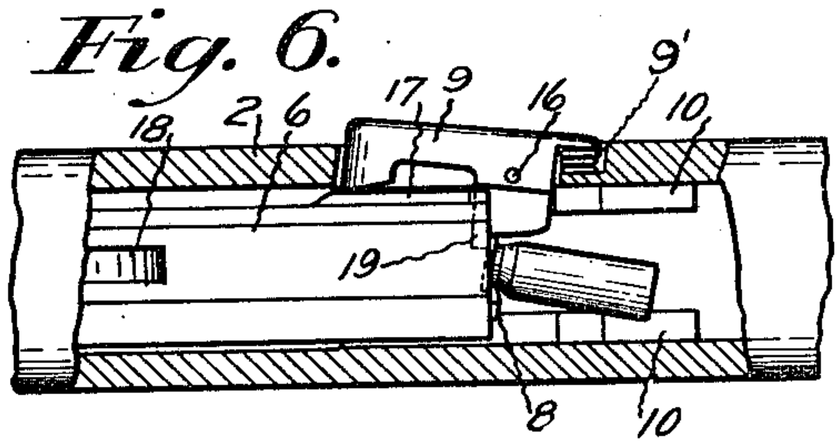


Fig. 8.

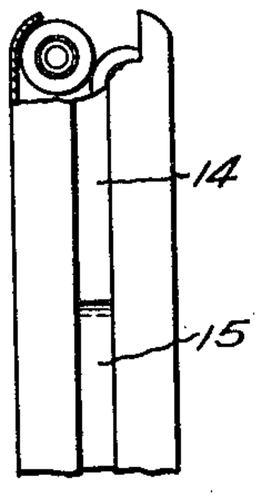
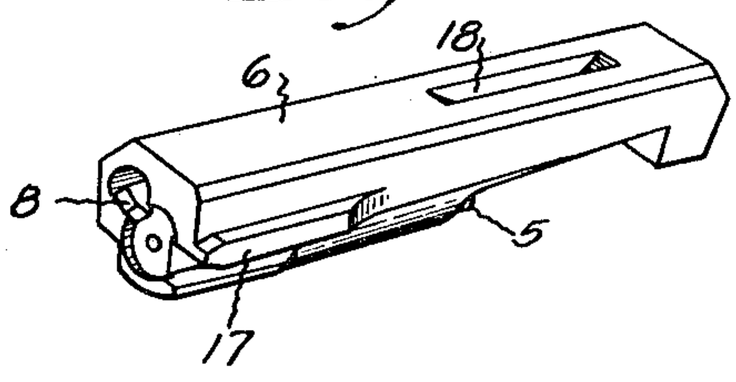


Fig. 9.



INVENTOR

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BY

Thurston Sturtevant

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Patented Aug. 14, 1923. 1,464,864

UNITED STATES PATENT OFFICE.

JOHN M. BROWNING, OF OGDEN, UTAH.

FIREARM.

Application filed September 27, 1921. Serial No. 503,602.

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, a citizen of the United States, residing at Ogden, in the county of Weber and State of Utah, have invented certain new and useful Improvements in Firearms, of which the following is a specification.

This invention relates to firearms and particularly to magazine firearms in which the cartridges are contained in magazines, either fixed or detachable.

Among the objects are to improve the manner of feeding the cartridges from the magazine to the chamber, so as to obviate feed jams; to facilitate the filling of magazines, and to facilitate the loading of removable magazines into the gun.

Usually the cartridges in the magazine, (especially in autoloading firearms) actuated by a spring or by the force of gravity, press against some part of the recoiling mechanism, causing friction during the recoiling movement. An object of the present invention is to do away with such friction.

Usually in all box magazine firearms, the top cartridge in the magazine bears against the breech block, or breech bolt, so that when the latter is moved rearwardly in the opening of the breech of the firearm, the cartridge in the magazine cannot jump into position to be caught by the return movement of said breech bolt, and forced into the chamber, until the front of the breech bolt has passed the rear of the cartridge in the magazine. This jumping of the cartridge then cannot take place until the breech bolt has nearly reached the limit of its rearward travel, and if it is returned to its forward position quickly, the cartridge in the magazine may not have time to jump up into position to be caught and loaded into the chamber. To insure this jumping of the cartridge, the magazine spring is sometimes strengthened, but to do so, increases the difficulty in loading.

In the improved firearm the aforementioned objections have been wholly overcome in a novel and peculiar way.

In the drawings accompanying and forming part of the present specification, I have shown in detail one of the several forms of embodiment of the invention, which to enable those skilled in the art to practice the invention will be set forth fully in the following description. Clearly I am not restricted to such disclosure; I may depart therefrom in a number of respects within the scope of the invention defined by the claims following said description.

Referring to said drawings:

Fig. 1 is a longitudinal section of the receiver of a firearm involving the invention, and illustrating the breech bolt in practically its backward position.

Figs. 2 and 3 are virtually similar views, but with less of the arm showing, and illustrate the breech bolt in a mid position and forward position, respectively.

Fig. 4 is a view somewhat like Fig. 3, showing the breech bolt as retracting and the manner of extracting a shell.

Figs. 5 and 6 are horizontal sectional, top plan views of the intermediate portion of the receiver and show particularly the action of the ejector and breech-bolt guide.

Fig. 7 is a transverse section through the receiver and looking rearwardly.

Fig. 8 is a rear elevation of the upper portion of the magazine with the corner removed.

Fig. 9 is a perspective view of the breech bolt from the front and left side.

The receiver or frame of a fire arm embodying the invention is represented by the numeral 2. Adapted to reciprocate back and forth in the receiver 2 is the inertia block 3, carrying the hammer 4 which is actuated by a spring so as to strike the firing pin 5 in a well known manner. The breech bolt 6 is linked to the inertia block 3 in the manner described in my prior application, Serial No. 460,907, filed April 13, 1921, and has a rib, as 17, the purpose of which will be hereinafter more fully described. The combined breech-bolt guide and ejector 9 fits into a slot cut into the side wall of the receiver 2 and has a pivot pin 16 extending through it. The lug on its rear end is forced yieldingly inwardly by the spring 9′, so as to project into the path of the breech bolt 6. Breech bolt supports 10 are riveted or otherwise fastened on each side of the receiver 2.

The trigger guard 12 is removably mounted in an opening in the bottom of the receiver 2, and just forward of said trigger guard 12 is situated the magazine 14, which is of the box type, having a spring 14′ and a follower 15 to force the cartridges toward the entrance of the magazine. The cartridges are prevented from escaping by the inturned lips at the top of the magazine,

best shown in Figs. 1 and 6. The first or top cartridge, that is, the last one loaded into the magazine, may be removed by sliding out at the front of the magazine, and if so removed, the spring 14′ expands and forces another cartridge into the ready-to-be-removed position. The breech bolt depressor 7 is secured in the top of the receiver 2 and when the breech bolt 6 is in its forward position the depressor 7 rests in the slot 18 cut in the top of the breech bolt 6.

The operation is as follows:

Starting with the recoiling parts in a retracted position as shown in Fig. 1, the inertia block 3 moves forward under action of a spring bearing against its rear end and forces the breech bolt 6 forward in front of it. As the latter member advances, its lower front surface strikes the base of the top cartridge in the magazine 14 and starts moving it forward toward the entrance of the chamber 11. During this forward movement the front of the breech bolt is held down so as to engage the cartridge, on account of the rib 17 sliding underneath the projecting lug of the breech bolt guide 9, as shown in Fig. 4, until it comes to the upwardly inclined surfaces of the breech bolt supports 10, shown in Fig. 1. As the breech bolt 6 continues forward, the cartridge is forced out of the magazine and well on its way into the chamber 11 allowing another cartridge to take its place at the top. At this stage, the breech bolt can raise at its forward end, the rib 17 being cut away at this point to allow it to pass the breech bolt guide 9, so upon further advance, the front of the breech bolt 6 rides up over the inclined surfaces of the supports 10. The rear end of the breech bolt then is raised up in front of the inclined abutment in the receiver 2, and the inertia-block 3 presses upon the rear end of the breech bolt 6 so that a cartridge is held tightly and securely enclosed in the chamber 11 ready to be fired.

Assuming that the cartridge in the chamber is fired, the expanding powder gases press rearwardly on the breech bolt 6, whose rear end is lowered by striking the inclined abutment in the receiver 2. The breech bolt then speeds to the rear, forcing back the inertia block, which in turn compresses a spring for the return movement, until the rearward excursion is stopped by the inertia block 3 striking a part of the receiver 2 (not shown).

As the breech bolt retreats the extractor grasps the rim of the empty case in the chamber 11 and draws it out, the said case being held in the counter bore in the face of the breech bolt 6 until it strikes the ejecting shoulder 19, when it is ejected through an opening in the receiver 2. This process of ejecting is common to a number of firearms. The rib 17 comes in contact with the front inclined face of the breech bolt guide 9 and pushes it outward, swinging the member 9 on its pivot 16 and compressing the spring 9′, Figs. 5 and 6. The front end of the breech bolt 6, after it has retracted beyond the inclined surfaces of the supporting shelves 10, rests on the top of the cartridge at the entrance of the magazine. When the front end of the breech bolt has passed back of the breech bolt guide 9, the spring 9′ is free to expand, the member 9 is turned on its pivot 16, and the breech bolt guide 9 snaps in front of the rib 17 as in Figs. 1 and 5, so that when the breech bolt moves forward again the front end of the rib acting on the cam surface on the breech bolt guide 9, tips the breech bolt downward whereby the rib 17 passes underneath the guide 9. Thus the breech bolt guide acts as a switch to tip the front end of the breech bolt down so that a portion of it is lower than the top of a cartridge against one of the lips of the magazine, in order that said cartridge will be carried into the chamber of the firearm by the advance of the breech bolt.

If, when the rearward motion of the breech bolt is stopped, the front end which carries the rib 17 is caused to vibrate or for any other reason, such as friction, or dirt in the mechanism, it is prevented from dropping down so as to be switched by the guide 9 into a track lower than the one in which it moved to the rear, the depressor 7 comes into play, and positively maintains the front end of the breech bolt depressed until the rib 17 is under the guide 9.

It is thus readily seen, that the breech bolt guide 9 serves to divert the front end of the breech bolt from a track of recoil which is in one plane, to a track of advance, which is in a lower plane than the track of recoil; that the depressor 7 positively assures the tipping down of the front of the breech bolt; that the sloping surfaces on the supports 10 raise the front of the breech bolt from the track of advance to the track of recoil, on which raised track it moves forwardly a short distance to close the breech of the firearm, and on which it recoils; and that the ejector and the breech bolt guide are one and the same piece.

It will be readily seen that if the magazine were entered into the top or side of the receiver instead of at the bottom, the breech bolt would be made to tip upward or to one side when at the rear of its backward stroke, instead of downward as shown. The invention then is not necessarily limited to a downward tipping motion of the breech bolt.

It will of course be clear that the invention involves certain fundamental relations and I have merely described rather in detail one of the many ways in which the in-

vention can be carried into effect. For instance it will be evident that the invention comprises as to one of its broad features a breech bolt and means for causing the automatic travel bodily of the breech bolt through an orbital path. I generally effect the transverse movement bodily of the breech bolt practically at the conclusion of its backward and forward strokes. In the organization shown and hereinbefore described, this transverse movement bodily of the breech bolt is advantageously utilized for loading.

What I claim is:

1. A firearm provided with a barrel and with a cartridge magazine, a reciprocatory breech bolt which when in a forward position is above the magazine, the magazine having spring means to advance the cartridges upwardly, and means for causing the breech bolt to pass along the cartridges on recoil and without acting on said spring, and to engage the topmost cartridge on the advance thereof and cause said cartridge thus engaged to be projected into the barrel, the firearm having means to positively prevent downward movement of the forward portion of the breech bolt on its initial rearward motion.

2. A firearm provided with a barrel and with a cartridge magazine, a reciprocatory breech bolt which when in active relation is above the magazine, and means for tipping down the rear end of the breech bolt to unlock it after the rearward stroke thereof has been inaugurated, for tipping down the front end of the bolt in a position, to engage a cartridge in the magazine, during the rearward stroke, and for tipping up the front end of the breech bolt to free it of the cartridges in the magazine, and for tipping up the rear end to lock the breech bolt, the last mentioned tipping actions occurring near the end of the forward stroke of the breech bolt.

3. A firearm having a receiver, a reciprocatory breech bolt in the receiver, the firearm having means to cause a tipping movement of the rear end of the breech bolt for locking and unlocking it and having means for causing a tipping movement at its forward end to engage cartridges in the magazine, and a movable member in the receiver, for causing the tipping movements of the front end of the breech bolt.

4. A firearm having a receiver, a reciprocatory breech bolt in the receiver, the firearm having means to cause a tipping movement of the rear end of the breech bolt for locking and unlocking it and having means for causing a tipping movement at its forward end to engage cartridges in the magazine, and a movable member in the receiver, for causing the tipping movements of the front end of the breech bolt, said movable member functioning with the breech bolt to eject the spent shell from the firearm.

In testimony whereof I affix my signature.

JOHN M. BROWNING.

Witnesses:

V. A. BROWNING,

E. A. ENSIGN.