

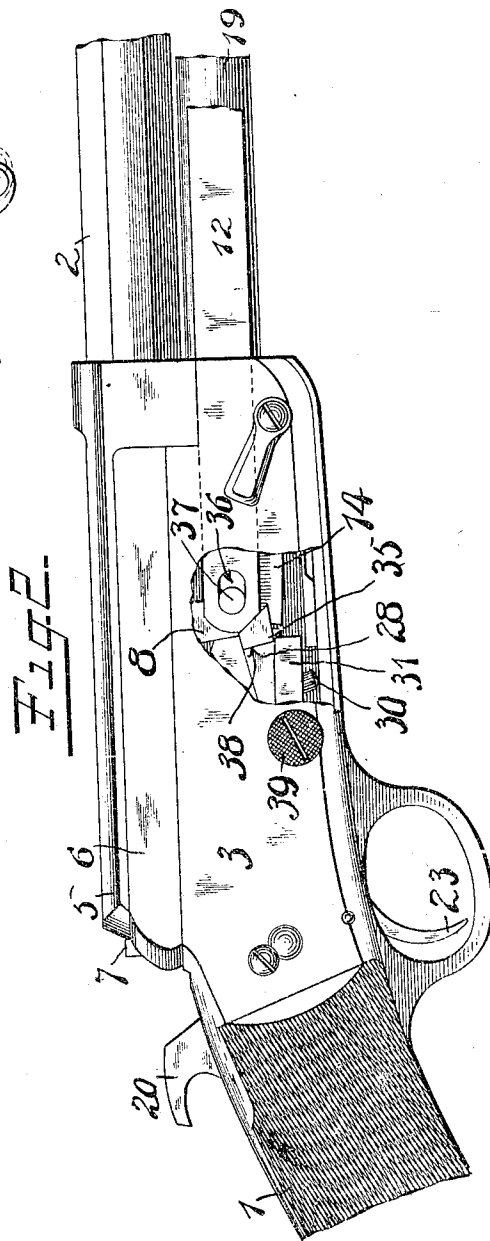
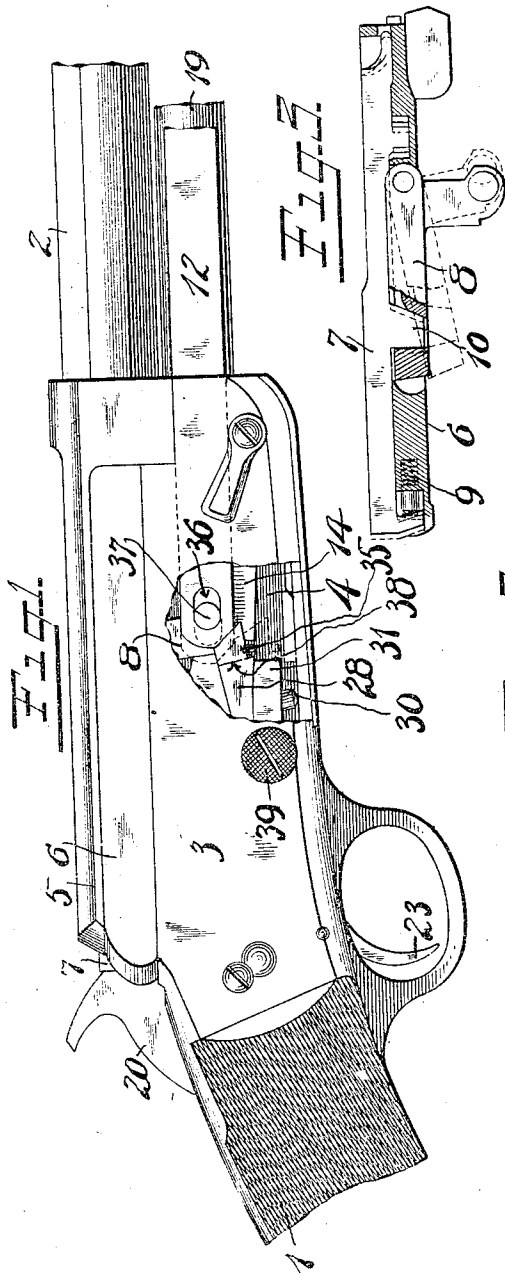
J. H. WHEELER, G. A. BECK & M. HEPBURN.
 REPEATING FIREARM.

APPLICATION FILED JAN. 31, 1911.

Patented July 11, 1911.

3 SHEETS—SHEET 1.

997.642.



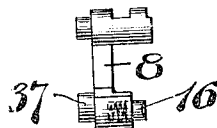
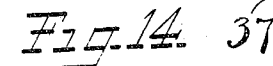
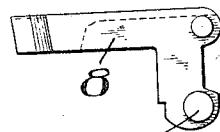
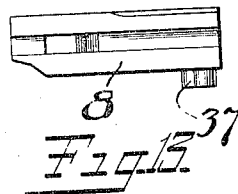
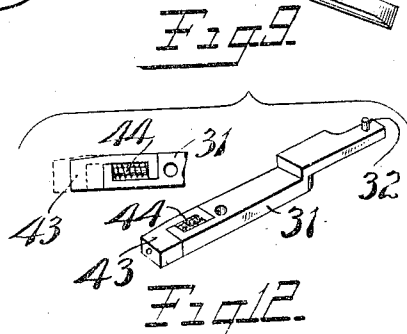
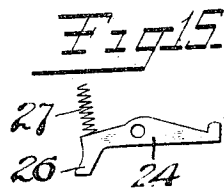
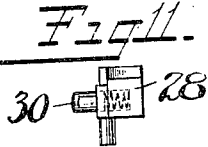
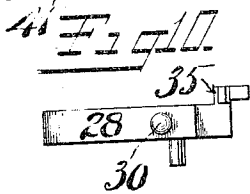
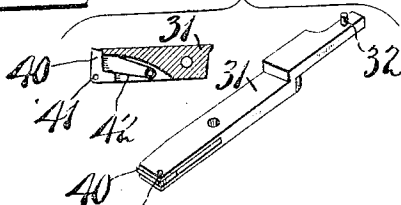
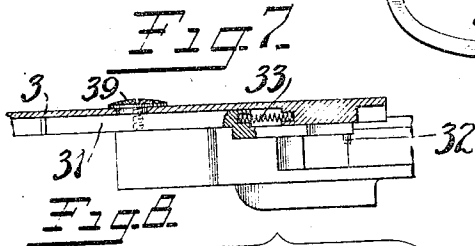
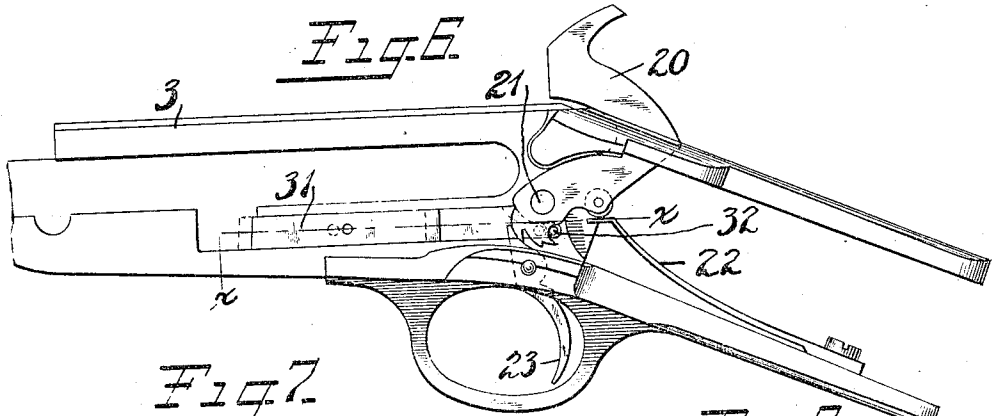
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J. H. WHEELER, G. A. BECK & M. HEPBURN.
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 3 SHEETS—SHEET 3.

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UNITED STATES PATENT OFFICE.

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REPEATING FIREARM.

997,642.

Specification of Letters Patent. Patented July 11, 1911.

Application filed January 31, 1911. Serial No. 605,671.

To all whom it may concern:

Be it known that we, JOHN HENRY WHEELER, GUSTAVE A. BECK, and MELVIN HEPBURN, citizens of the United States, residing at New Haven, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Repeating Firearms, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in repeating firearms and has for its object the provision of novel safety apparatus which coacts with the breech mechanism in such a manner as to render absolutely secure the locking of the breech block against any possibility of "blow back."

In many respects certain parts of the firearm shown herein will be found to be illustrated and described in detail in United States Letters Patent to L. L. Hepburn, numbered 882,561, dated March 24th, 1908, hence, as to such parts, only a general description need be resorted to herein.

In the drawings, Figure 1 is a side elevation of the breech portion of a gun, one side plate being partly broken away to show the position of certain internal parts. Fig. 2 is a similar view, certain of the internal parts being in a different position. Fig. 3 is a detail view, partly in section, of the breech block, firing pin and locking bolt. Fig. 4 is a side elevation, partly in section, with one side plate entirely removed, showing the internal parts in one position. Fig. 5 is a similar view showing said parts in another position. Fig. 6 is an inside view of the side plate carried by the stock portion, together with certain parts mounted thereon. Fig. 7 is a horizontal section on the line *x-x*, Fig. 6. Figs. 8 and 9 are views of different modifications of the same part. Fig. 10 is a view of the under side of a safety block. Fig. 11 is an end elevation thereof. Fig. 12 is a plan view of a locking bolt. Fig. 13 is a side elevation thereof. Fig. 14 is a rear end elevation thereof. Fig. 15 is a side elevation of a safety sear.

1 represents the stock portion; 2 represents the barrel portion. In this particular construction, the stock and barrel portions are made conveniently detachable for the purposes of take-down, each of said parts carrying forwardly and rearwardly projecting overlapping side plates which may be

connected in any suitable manner when the gun is set up ready for firing. The side plate carried by the stock portion is indicated at 3, while the side plate carried by the barrel portion is indicated at 4.

5 is an overhanging top plate, in this instance carried by the side plate 4.

6 is a reciprocating breech block arranged to slide to and fro underneath the top plate 5.

7 is a firing pin movable to and fro in the breech block.

8 is a locking bolt, in this instance in the form of a bell crank, the same being pivoted to rock in a recess in the underside of the breech block. When the locking bolt is tilted down into the locking position (indicated in dotted lines, Fig. 3), the firing pin is pressed back under the action of the usual spring 9 so that the horn 10, carried by the firing pin, will overstand and hold down the locking bolt. The locking bolt, when tilted down, engages a fixed abutment 11, and so long as it is in this position, the breech block will be held positively in its forward closed position.

12 is an action rod.

13 is a sliding handle arranged underneath the barrel 2 and connected to the rod 12 so that by reciprocating said handle to and fro the breech mechanism will be actuated. The rod 12 makes operative engagement with the locking bolt.

14 is a cartridge carrier pivotally mounted at 15.

16 is a spring pressed stud arranged on the rear side of the depending arm of the locking bolt when viewed as shown in Figs. 4 and 5. This stud, when the parts are in the positions indicated in Figs. 1, 2, 4 and 5, is pressed back by resting against the surface of the carrier 14. When the gun is unlocked and the breech block retracted, the locking bolt will move back with the breech block until the stud 16 clears the tail end of the carrier 14, whereupon it will be projected out so as to stand to the rear of the cam incline 17 on the tail end of said carrier. When the breech block is moved forwardly again, this stud 16, acting against the incline 17, will tilt the carrier so as to carry up a fresh cartridge ready for insertion into the barrel. As soon as the front end of the breech block engages the cartridge, the stud 16 will have reached and

passed the high part of the incline 17, whereupon the forward end of the carrier will descend and the stud 16 will be pressed back as it rides up the side incline 18 on the carrier.

20 is the usual hammer pivoted at 21 and impelled forward by a spring 22.

23 is a finger trigger for controlling the hammer 20.

It will be unnecessary to describe the magazine 19, the cut-off, the extractor and ejector mechanism since all those parts, as well as all of the parts described up to this point may be of any well known construction or correspond closely with the same parts shown and described in detail in the above referred to patent.

Our invention aims at securing the absolute safety of the firearm when employed with other than low-powered or small caliber cartridges, the new parts being so arranged, and coacting in such a manner, directly and indirectly with the locking bolt that the same cannot be released until after the discharge of the cartridge has occurred, thereby preventing any danger of "blow back."

Referring to Fig. 15, 24 represents what we will term a safety sear, the same being pivoted in the breech frame at 25. This safety sear has a tail end 26 which is arranged to project into a notch in the hub of the hammer when the latter is at full cock and so long as the breech block is not locked, said locking position of said sear being indicated in Fig. 5. When, however, the breech block is fully locked, the tail end of the locking bolt 8 will engage the forward end of the sear 24 and tilt it into the position shown in Fig. 4, thereby freeing its tail 26 from the notch in the hub of the hammer so as to permit the latter, when the trigger 23 is pulled, to advance, thereby guaranteeing the complete locking of the arm before the hammer can descend to advance the firing pin 7.

27 is a spring which is arranged to move the sear 24 into the locking position when the hammer is down and the locking bolt is lifted.

28 is a safety block pivoted at 29 in the lower part of the breech frame. The forward end of said safety block is pressed upwardly by a spring pressed stud 30, or equivalent device. This forward end of the safety block is beveled rearwardly and is arranged to engage the rear end of the action rod 12, as shown in Fig. 4, when the latter is fully advanced and the breech is locked. This safety block is held in said position by any suitable means, but we have shown herein a preferred means comprising a sliding bolt 31 mounted upon the inside of the side plate 3. The rear end of this bolt, as shown in Figs. 6, 7, 8 and 9 (Figs.

8 and 9 illustrating modifications) is provided with a laterally extending portion or pin 32 which projects to the rear of the hub of the hammer, said hub being provided with a shoulder arranged to engage said pin so as to retract the bolt 31 (see Fig. 6) when the hammer is advanced. When the hammer is cocked, the bolt 31 is moved forwardly by a suitable spring 33. When the bolt 31 is advanced, its forward end projects slightly under a shoulder 35 at the side of the safety block 28 (see Fig. 2), thereby absolutely holding said block against being tilted down. When, however, the hammer is advanced, as shown in Fig. 1, the bolt will be retracted to disengage it from the block 28, whereupon said block 28 may be tilted down to the position shown in Fig. 5 by retracting the action rod 12, the inclined engagement between these parts effecting said tilting down movement. It will be observed that the connection between the action rod 12 and the depending arm of the locking bolt comprises a stud 37 standing in an opening or hole in the rear end of the action rod 12. This hole is elongated in the line of the action rod to form a slot 36 so that there will be a slight amount of lost motion, said lost motion being provided for the purpose of permitting said rod 12 to be retracted sufficiently to depress the forward end of the block 28 before the wall at the forward end of the slot will engage said stud 37 and commence to unlock the locking bolt.

In Fig. 1, the gun is shown locked and with the hammer down, the parts appearing in that position in which they would stand as the cartridge is exploding. After the cartridge has exploded and the action rod is retracted, it will first move to the position indicated in dotted lines and depress the safety block 28 to the position shown in dotted lines before it will begin to move the locking bolt. A continued rearward movement of the rod 12 will now tilt the locking bolt from the locked to the unlocked position by reason of the fact that the firing pin is advanced so as to disengage the rear end of the locking bolt and permit it to tilt up. A full retraction of the action rod 12 will then move back the breech block, extract and eject the empty shell and cock the hammer, whereupon the latter will become locked by the safety sear 24. The forward movement of the rod 12 will operate the carrier to convey a fresh cartridge from the magazine up to a position in front of the now advancing breech block which will engage the same and push it into the barrel. During the retraction and forward movement of the action rod 12, said rod will rest upon the top of the shoulder at the forward end of the safety block 28, holding the same depressed so that even though the hammer is cocked, the bolt

31 will not advance inasmuch as its forward end is held back by engagement against the shoulder 38. The moment the breech block is fully advanced, a slightly continued forward movement of the rod 12 will tilt the locking bolt into the locking position indicated in Fig. 4, whereupon the sear 24 will be tilted to free the hammer; the safety block 28 will spring up to a position behind the rear end of the action rod 12 and the safety bolt 31 will spring forward to its position under the shoulder 35 of the said safety block to hold it in its elevated or safety position, whereupon the gun is again ready to fire.

By the foregoing, or a substantially equivalent arrangement of parts, the firearm may be used with the greatest safety when cartridges of high power or relatively large caliber are used. In such heavier service said safety devices are exceedingly desirable for although in the ordinary operation of the gun, as herein shown, it might only rarely happen that the user would so carelessly handle the gun as to inadvertently unlock the same and invite a "blow back", the presence of the safety apparatus herein described guarantees against such an accident even by the unskilful use of the firearm.

39 is a finger piece standing on the outside of the plate 3 and connected through a slot 4 with the bolt 31 whereby the latter may be operated to release the block 28 should it for any reason be desirable to unlock the breech block when the hammer is cocked; said unlocking of the breech under such circumstances being permitted by first manually retracting the bolt 31 and then partially the action rod 12, following which, by pressing with the thumb against the rear end of the firing pin, the locking bolt would be released to permit the continued rear movement of the action rod and the opening of the breech.

In the modifications shown in Figs. 8 and 9 we have shown a further safety attachment upon the bolt 31 which operates as a secondary safety device to guard against the releasing of the safety block 28 even after the hammer has descended and until the cartridge has been discharged. As is well known, the user of a "pump" gun always has one hand in engagement with the handle 13; and while aiming and firing the same, he involuntarily pulls back upon the same to hold the firearm firmly against the shoulder. This pulling back on said handle always invites the danger of a premature unlocking of the gun, which would result, in the event the cartridge "hangs fire", in blowing open the breech. To guard against this, we have provided said secondary safety means to prevent the release of the safety block 28, even though the hammer has advanced and the bolt 31 has been retracted.

This secondary safety means may be modified in various ways. In Fig. 8 we have shown it in the form of a small bell-crank lever 40, pivoted at 41 in a slot in the forward end of the bolt 31. The upper end of this bell-crank lever may project slightly above the upper surface of the bolt 31, and it is this upper end of said lever that engages with the under side of the shoulder at the forward end of the safety block 28, hence it follows that a rearward pull of the action rod 12 will tend to force the block 28 downwardly so as to hold it friction-tight upon the upper end of the bell-crank 40. Now, if the hammer is advanced and the bolt 31 retracted, the upper end of the bell-crank 40 will tilt forward, or hang, underneath the safety block 28, thereby holding the same in the safety position until the cartridge has been discharged. The recoil of the cartridge will cause the user to involuntarily and momentarily release his rearward pull upon the action rod so that the drag on the safety block 28 against the upper end of the lever 40 will be released and the latter will swing back into its normal position under the influence of a spring 42, thereby releasing the safety block to permit the user to again operate the breech mechanism in the manner previously described.

In Fig. 9 we have shown a modification of the secondary safety means in which, instead of providing a swinging piece like the bell-crank 40 at the forward end of the bolt 31, we have provided a reciprocating piece 43 which is suitably mounted on the end of the bolt 31 so that the main body of said bolt 31 may be retracted by the dropping of the hammer without retracting the piece 43, leaving the latter in the forward safety block engaging position, it being there held in the same manner as described in connection with the part 40. A spring 44 may be employed to restore the part 43 to its normal position when the drag between the safety block 28 and said piece 43 is released by the discharge of a cartridge and the incidental recoil of the firearm.

While we have shown our invention and improvements in their much to be preferred forms, it should, of course, be understood that we contemplate that various changes may be made in many details without departing from the spirit and scope of the invention.

What we claim is:

1. In a repeating firearm, a breech frame, a reciprocating breech bolt, an action rod operatively connected to said breech bolt, a safety device comprising a blocking member arranged to prevent the retraction of said action rod when said blocking member is in one position, a hammer and means for holding said blocking member in said position when said hammer is cocked, said means

comprising a bolt arranged to engage said blocking member.

2. In a repeating firearm, a breech frame, a reciprocating breech bolt, an action rod 5 operatively connected to said breech bolt, a safety device comprising a blocking member arranged to prevent the retraction of said action rod when said blocking member is in one position, a hammer means for holding 10 said blocking member in said position when said hammer is cocked, said means comprising a bolt arranged to engage said blocking member, and a secondary safety device between said bolt and blocking member and arranged to hold the latter in its 15 blocking position so long as there is a rearward drag upon said action rod.

3. In a repeating firearm, a breech frame, a movable breech block, an action rod operatively 20 connected to said breech block, means for permitting a limited amount of lost motion in the connection between said action rod and breech block, a tilting blocking member having a beveled portion arranged to engage said action rod when the 25 latter is advanced, a bolt cooperating with said blocking member to hold it in the rod engaging position, a hammer and a connection between said hammer and said holding bolt means to draw back the latter when the 30 hammer is advanced.

4. In a repeating firearm, a breech frame, a movable breech block, an action rod operatively 35 connected to said breech block, means for permitting a limited amount of lost motion in the connection between said action rod and breech block, a tilting blocking member having a beveled portion arranged to engage said action rod when the 40 latter is advanced, a bolt cooperating with said blocking member to hold it in the rod engaging position, a hammer, a connection between said hammer and said holding bolt means to draw back the latter when the 45 hammer is advanced, and a movable extension at the forward end of said bolt, said extension being held in engagement with said blocking member by friction so long as there is a rearward drag on said action rod, 50 even though said bolt is retracted by the dropping of the hammer.

5. In a repeating firearm, a breech block, a manually controllable means for moving the same, a blocking device to prevent movement 55 of the same in a direction to open the gun simultaneously with the act of firing the same until after the cartridge has been exploded, said means comprising a hammer controlled member and an intermediate connection between said hammer controlled 60 member and said blocking means comprising a piece arranged to be frictionally engaged and held by said blocking member under certain conditions.

6. In a repeating firearm, a breech frame,

a reciprocating breech block, a tilting locking bolt therefor, a hammer, an action rod operatively connected with said breech block through said locking bolt, said connection 70 affording a limited amount of lost motion whereby said action rod may be partially retracted under certain conditions without operating the locking bolt, a movable safety block to hold said action rod in its extreme forward position, a cam surface connection 75 between said rod and block and means for holding said safety block against movement in a direction to release said action rod so long as the hammer is cocked.

7. In a repeating firearm, a breech frame, 80 a reciprocating breech block, a tilting locking bolt therefor, a hammer, an action rod operatively connected with said breech block through said locking bolt, said connection affording a limited amount of lost motion 85 whereby said action rod may be partially retracted under certain conditions without operating the locking bolt, a movable safety block to hold said action rod in its extreme forward position, means for holding said 90 safety block against movement in a direction to release said action rod so long as the hammer is cocked, and a movable extension at the forward end of said means which continues to hold said safety block after the 95 hammer is dropped and so long as there is uninterrupted pressure against said block by said action rod.

8. In a repeating firearm, a breech frame, a reciprocating breech block, a tilting locking 100 bolt therefor, a hammer, an action rod operatively connected with said breech block through said locking bolt, said connection affording a limited amount of lost motion whereby said action rod may be partially 105 retracted under certain conditions without operating the locking bolt, a movable safety block to hold said action rod in its extreme forward position, means for holding said safety block against movement in a direction 110 to release said action rod so long as the hammer is cocked, and a supplemental safety means comprising a spring-retracted extension at the forward end of the holding means for said safety block. 115

9. In a repeating firearm, a breech frame, a reciprocating breech block, a firing pin carried thereby, a hammer, a swinging locking bolt carried by the breech block, a reciprocating action rod arranged to engage 120 said locking bolt, a movable blocking device arranged to block the rearward movement of the action rod when the breech is closed and locked and said hammer is cocked, a bolt co-acting with said safety block and 125 operable by said hammer in one direction, and means for operating said bolt in an opposite direction to cause it to hold said safety block against movement in a direction to release said action rod, said action rod having 130

an inclined or cam connection with said safety block.

10. In a repeating firearm, a breech frame, a reciprocating breech-block, a firing pin carried thereby, a hammer, a swinging locking bolt carried by the breech block, a reciprocating action rod arranged to engage said locking bolt, a movable blocking device arranged to block the rearward movement of the action rod when the breech is closed and locked and said hammer is cocked, a bolt operable by said hammer in one direction, means for operating said bolt in an opposite direction to cause it to hold said safety block against movement in a direction to release said action rod, said action rod having an inclined or cam connection with said safety block, said bolt having a movable forward end arranged to be frictionally held against movement when once in engagement with the safety block and so long as there is an uninterrupted rearward drag upon the action rod, and means for withdrawing said extension from said safety block when the hammer is down and when a rearward drag upon the action rod is released.

11. In a repeating firearm, a breech frame, a reciprocating breech block, a tilting locking bolt therefor, a hammer, said locking bolt including a downwardly extending arm, an action rod operatively connected with said downwardly extending arm and capable

of a limited amount of movement independently thereof, a safety block arranged to cooperate with said action rod and to prevent the rearward movement of said action rod when said block is in one position, a cam surface connection between said rod and block and means to hold said safety block in the rod-locking position when the hammer is cocked, said means being operable by said hammer but independent of both said block and hammer.

12. In a repeating firearm, a breech frame, a reciprocating breech block, a tilting locking bolt therefor, a hammer, said locking bolt including a downwardly extending arm, an action rod operatively connected with said downwardly extending arm and capable of a limited amount of movement independently thereof, a safety block arranged to cooperate with said action rod and to prevent the rearward movement of said action rod when said block is in one position, means to hold said safety block in the rod-locking position when the hammer is cocked, and means for manually freeing said safety block independently of the hammer.

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