

April 19, 1938.

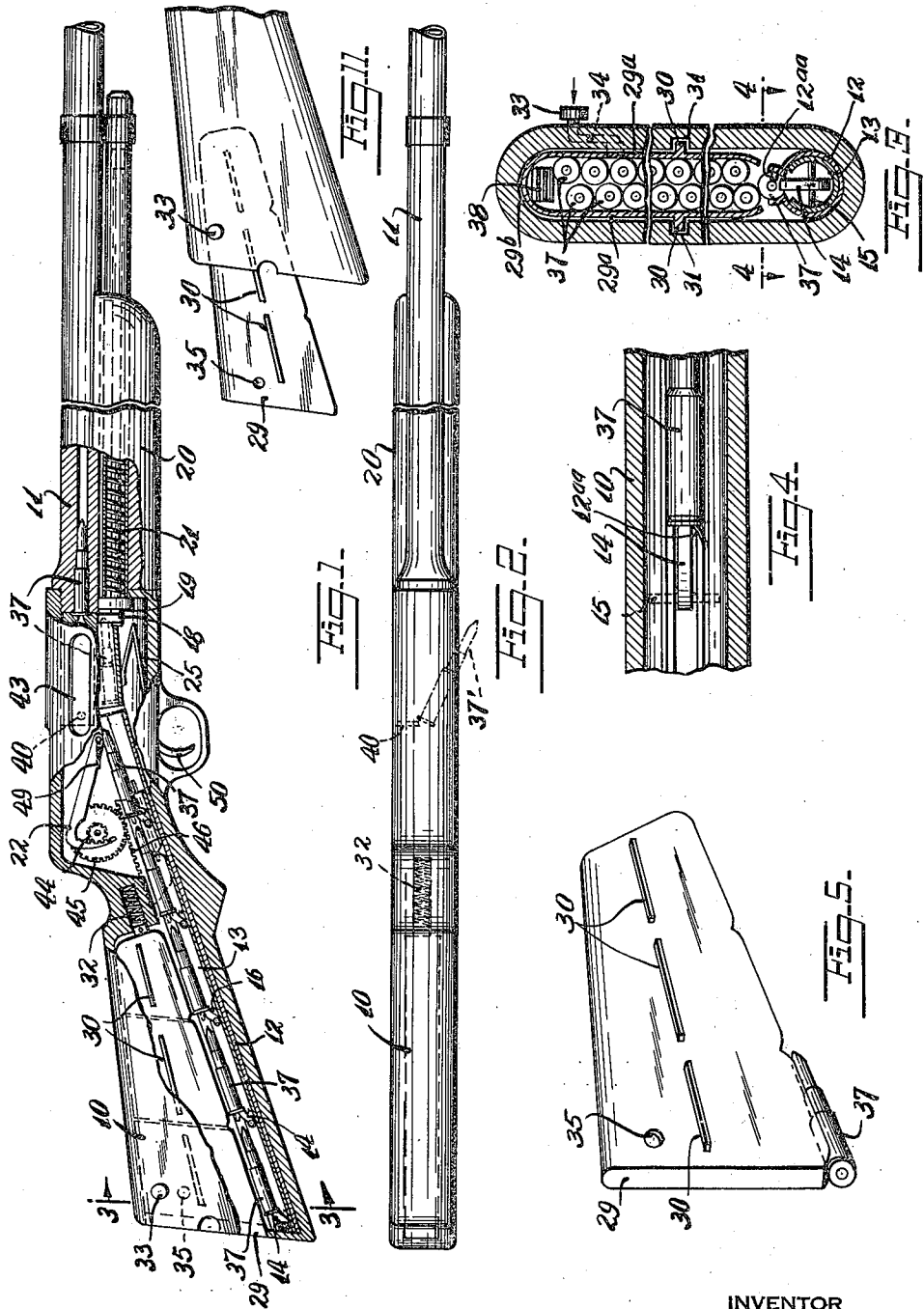
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2,114,821

GUN

Filed Oct. 29, 1936

3 Sheets-Sheet 1



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2,114,821

GUN

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3 Sheets-Sheet 2

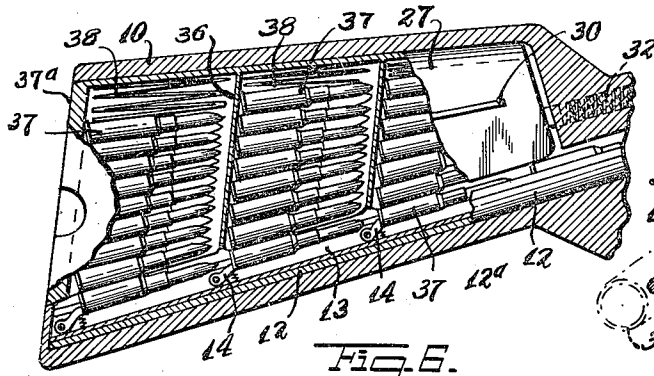


Fig. 6.

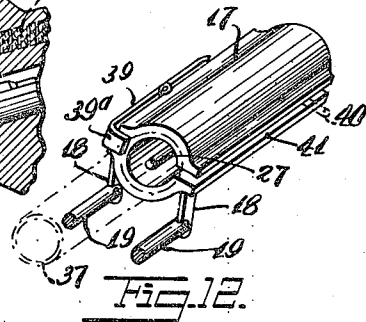


Fig. 12.

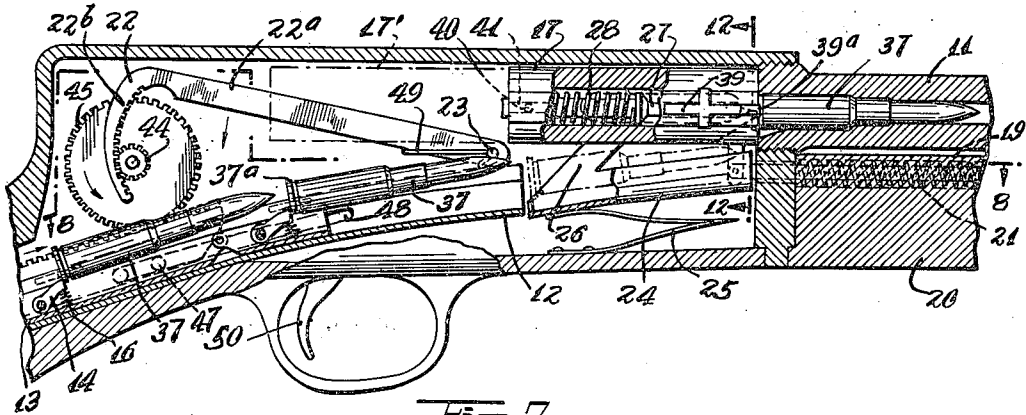


Fig. 7.

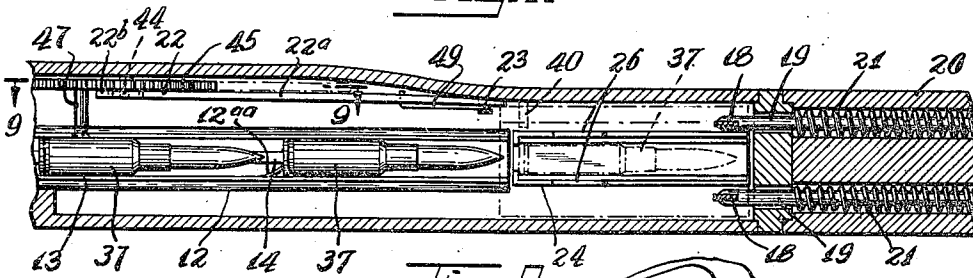


Fig. 8.

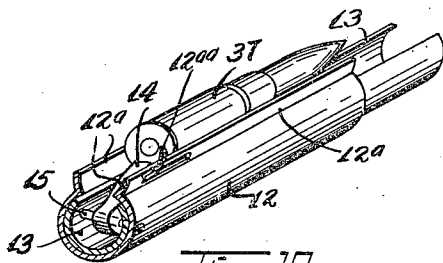


Fig. 10.

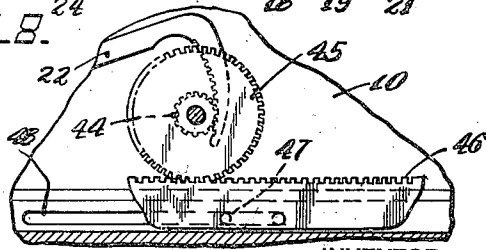


Fig. 9.

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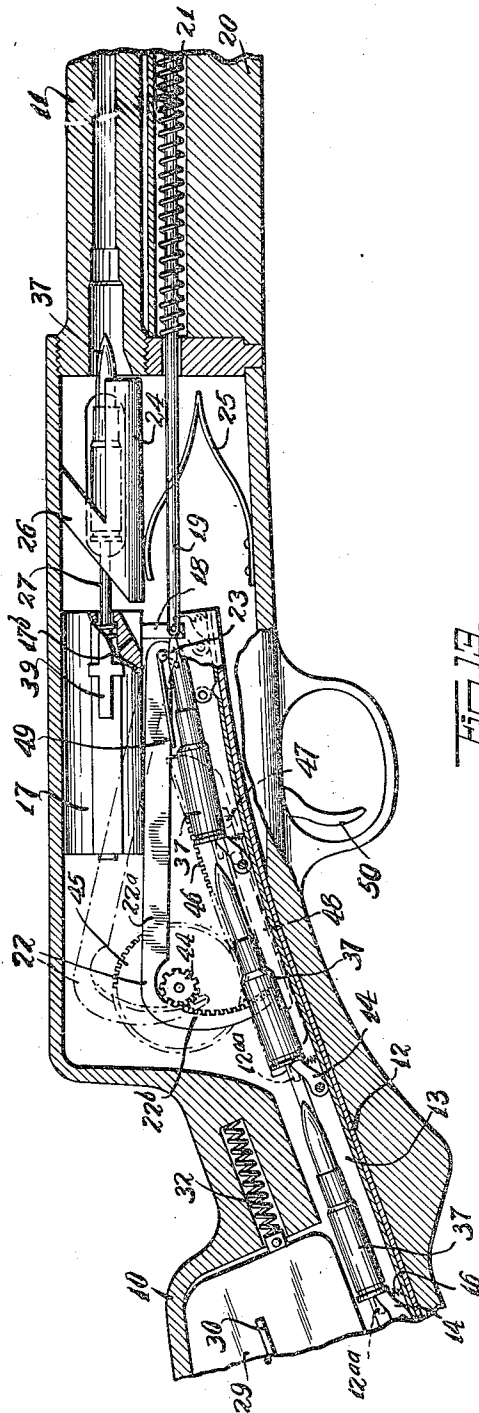
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2,114,821

GUN

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3 Sheets—Sheet 3



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UNITED STATES PATENT OFFICE

2,114,821

GUN

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5 Claims. (Cl. 42—17)

This invention relates to new and useful improvements in a gun.

The invention has for an object the construction of a gun, or rifle which is provided with a magazine in its butt for holding bullets, and which is provided with a novel arrangement for feeding the bullets one at a time to the barrel of the gun.

The purpose of the invention is to modify the present automatics or small machine guns, designed and constructed to be carried by infantry troops and fired without the aid of separate support; also to eliminate certain unnecessary parts, such as drum magazines, belts, breech loaders, etc., which are cumbersome to carry with the gun and difficult to apply during the action of the infantry; also to provide a special magazine through the hollow butt to increase the bullet holding capacity of the gun.

More specifically the invention contemplates the provision of a tubular member extending along the bottom of said hollow butt, and having an open top slot with a flange support for bullets and stop elements to hold the bullets from moving rearwards, and associated with a novel carrier operative automatically when the gun is discharged.

Furthermore the invention proposes the provision of a carrier element slidable within the tubular member and carrying pawls for moving bullets along said flanged support.

The invention furthermore makes use of a percussion shuttle and bullet grip slidably mounted upon the inner end of the barrel of the gun and arranged for drawing rearwards a fired shell.

The invention also proposes the provision of means for advancing said carrier when the shuttle moves rearwards and retreating said carrier when the shuttle moves forwards.

Furthermore the invention contemplates the provision of a conveying means at the front end of said tubular member for receiving a bullet from said flanged support and lifting it up to said barrel.

The invention also proposes the provision of means for moving said lifted bullet into said barrel.

It is another object of this invention to provide cooperating elements on said shuttle and conveying means for lowering the conveying means when the shuttle moves forwards to a normal position.

A further object of this invention resides in

the details of construction of the bullet magazine as will hereinafter be fully pointed out.

Still further the invention proposes the construction of a gun embodying the features mentioned which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:—

Fig. 1 is a fragmentary elevational view of a gun, constructed according to this invention, with certain portions thereof broken away to show the interior construction.

Fig. 2 is a plan view of the gun shown in Fig. 1.

Fig. 3 is a fragmentary enlarged sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a perspective view of the bullet magazine per se, illustrated with one bullet discharging therefrom.

Fig. 6 is a fragmentary longitudinal sectional view of the butt end of the gun showing the bullet magazine partly in section.

Fig. 7 is a fragmentary enlarged detailed view of that portion of the gun in the vicinity of the inner end of the gun barrel.

Fig. 8 is a sectional view taken on the line 8—8 of Fig. 7.

Fig. 9 is a sectional view taken on the line 9—9 of Fig. 8.

Fig. 10 is a fragmentary perspective view of a portion of the tubular member and carrier for the bullets.

Fig. 11 is a fragmentary elevational view of the butt end of the gun with the bullet magazine partially removed.

Fig. 12 is a perspective view of the percussion shuttle and bullet grip looking in the direction of the line 12—12 of Fig. 7.

Fig. 13 is a view similar to Fig. 7, but illustrating the parts in a position in which the percussion shuttle is in its rearward position.

The gun according to this invention includes a hollow butt 10 and a barrel 11 connected therewith. A tubular member 12 extends along the bottom of the hollow butt, so as not to effect the design of the gun as shown in Figs. 7, 10, and 13, and has an open top slot with a flange portion 12^a for supporting bullets, as clearly

shown for example in Fig. 10. One of the flanges 12^a has flexible lugs 12^{aa} stamped therefrom and serving as stops to prevent the bullets from moving rearwards. These stop elements 12^{aa} are sufficiently resilient to allow bullets to move forwards past them.

A carrier element 13 is slidably mounted within the tubular member 12 and carries a plurality of pawls 14. Each of these pawls is mounted on a support pin 15, and extends forwards, and is held, resiliently, in a raised position by a spring 16, (see Figs. 1 and 7). These pawls are adapted to engage against the back ends of the bullets upon the flanges 12^a, to move the bullets forwards as hereinafter further explained.

A repercussion shuttle and bullet grip 17 is slidably mounted upon the inner end of the barrel of the gun, and is adapted to draw rearwards, fired shells. More specifically, the shuttle 17 is provided with front lugs 18 to which rods 19 are connected. Each rod 19 extends forwards through a housing element 20 attached upon the bottom side of the gun barrel 11. A spring 21 is arranged coaxially upon each rod 19 and acts to normally maintain the shuttle 17 in its forward position. These springs are sufficiently weak to permit the shuttle 17 to move rearwards a predetermined amount due to the repercussion when the gun is fired. Then the springs 21 are capable of moving the shuttle 17 back to its front position.

A means is provided for advancing the carrier element 13 when the shuttle moves rearwards and returning said carrier element when the shuttle moves forwards. This means is controlled and operated by a rack finger 22 pivotally mounted by a pintle pin 23, and extended into the path of motion of the shuttle. There is also a conveying means at the front end of the tubular member 12 for receiving a bullet from said flanges 12^a, and lifting it up to the barrel 11. This conveying means includes a conveying element 24 urged upwards by a spring 25 and controlled by a cam element 26.

There is also a means for moving the lifted bullet into the gun barrel and includes a pin 27 mounted upon the shuttle 17 and urged into an extended position by a spring 28. The cam element 26 is adapted to engage against a portion of the shuttle 17 when the shuttle moves forwards from its rear position for lowering the conveying element 24 to its normal position in which it is ready to receive a new bullet.

The butt 10 has an interior hollow communicating with its rear end. A bullet supply magazine 29 engages into the hollow butt and may be removed from this rear end. This bullet magazine comprises substantially an inverted U-shaped member consisting of face portions 29^a and a top connecting bent portion 29^b. The face portions 29^a are provided with ribs 30 engaging grooves 31 formed in the inner faces of the side walls of the hollow butt. These ribs and grooves serve to guide the magazine to assume a proper position when it is placed within the butt.

There is a spring 32 within a recess in the butt and which acts against the inner end of the magazine 29 for normally urging it outwards. There is a latch element 33 to maintain the magazine in its inner position. This latch comprises an element pivotally supported intermediate of its ends by a pintle pin 34, and adapted to have its inner end engage in an opening 35 in the side of the magazine 29. The outer end of the latch 33 may be pushed inwards as indicated by the arrow in Fig. 3 to release the magazine. When

the magazine is released it will be forced rearwards by the spring 32.

The magazine 29 is divided by several transverse partitions 36 into several distinct compartments, each adapted to receive a group of bullets 37. There is a spring 38 in each of the compartments, at the top, urging the bullets downwards. The bullets may come out from the bottom of the magazine and discharge upon the flanges 12^a of the tubular member 12. The tubular member 12 extends from a rear position beneath the magazine 29 to a front position adjacent the conveying element 24. The tubular member is fixedly mounted within the butt 10. The carrier element 13 is also of tubular formation and is arranged within the tubular member 12 so as to be slidably supported. The pawls 14 have blunt forward ends so that they may engage against the rear ends of the bullets to move them forwards.

The repercussion shuttle 17 is provided with a grip finger 39 secured upon one side thereof and having a portion 39^a extending across a portion of the front of the shuttle and adapted to engage the rear head 37^a formed upon the rear end of the shuttles. It is this flexible finger 39 which draws a fired shell out from the gun barrel when the shuttle moves rearwards. A pin 40 is arranged upon the face of one of the inner walls of the gun case and when the shuttle 17 travels rearwards this pin 40 passes through a groove 41 in the side of the shuttle 17 and strikes against one side of the rear end of the fired shell, pivoting the shell laterally as indicated by the dot and dash lines 37' in Fig. 2, free from the shuttle. The side wall of the gun butt 10 is formed with an opening 43 through the pivoted shell discharges and falls to the ground.

The means for advancing the carrier element 13 includes the said rack finger 22 and a pinion 44 rotatively supported within the gun butt and meshing with the teeth of the rack finger. This rack finger has an arm portion 22^a which is disposed in the path of motion of the shuttle. From the arm 22^a there projects an arcuate portion 22^b. It is this rack portion 22^b which meshes with the pinion 44. The pinion 44 is fixedly connected coaxially with a gear 45. This gear meshes with a carrier rack 46 supported by several pins 47 which extend through a slot 48 in the side of the tubular member 12. These pins 47 are fixedly connected with the carrier element 13, consequently the carrier will be moved, indirectly, when the rack finger 22 is moved by the shuttle 17.

The conveying element 24 is adapted to normally maintain a position in line with the tubular member 12. This position is maintained because the cam element 26 which is mounted upon the side of the conveying element 24, engages the bottom of the shuttle 17. When the shuttle 17 moves to its rearward position indicated by the dot and dash lines 17' in Fig. 7, and the full lines in Fig. 13, the conveying element 24 will move to a raised position shown in Fig. 13. The shuttle element 17 is formed with a cam surface 17^b, (see Fig. 13) which is adapted to engage against the cam element 26 when the shuttle moves forwards, to move the conveying element 24 down to its original normal position. A spring 49 is arranged coaxially upon the pintle 23 and has one of its ends engaging the arm 22^a of the rack finger 22 for urging the rack finger upwards to its original normal position when the shuttle 17 moves forwards.

The firing mechanism for the gun, controlled

by the trigger 50, is not shown on the drawings since it forms no part of the invention, and is old in the art. Heretofore many guns have been made which have repercussion shuttles to pull the bullets out from the gun barrel, and with which trigger operated firing mechanism has been included.

The operation of the device is as follows:—

Assuming the gun is in the position shown in Fig. 1 and a loaded magazine is inserted into the open end of the butt. This done by engaging the ribs 30 into the grooves 31 and manually sliding it inward until it contracts the spring 32 and engages the button 33 to lock it in position. By moving the shuttle 17 back and forth a few times to press down the rack finger 22 which motion is transmitted to the pinion 44, the gear 45 and the rack 46 which is pinned to the member 13, which moves the carrier element forward. The bullet 37 located at the forward end of the flanges will be forced upon the conveying element which lifts it up to a position in which the shuttle 17 will force it into the end of the barrel to load the gun for firing. When the rack finger 22 returns to its normal position the carrier element moves back to its normal position to receive another bullet from the magazine which has already fallen upon the flanges 12^a. The chief advantage of this construction is that no bullet is on the conveying element while the bullet in the barrel is being fired thus avoiding the danger of bullet exploding within the gun butt while one shell is being fired. It is believed that the elapsing time while magazines are being changed is sufficient to permit the chamber in the gun butt to cool off to prevent the accidental discharging of bullets.

Assume the gun in the condition shown in Figs. 1 and 7. When the trigger 50 is pulled the firing pin (not shown) will strike the rear of the bullet and cause it to discharge. The repercussion of the explosion will send the shuttle rearwards. The shuttle will move the rack finger 22 downwards. This motion will be transmitted by the pinion 44, the gear 45, the rack 46, and the pins 47, to move the carrier element 13 forwards. The bullet 37 at the forward end of the flanges 12^a will be forced upon the conveying element 24, and all other bullets upon the flanges 12^a will be forced one position forward. They will maintain these positions because of the stop elements 12^a. A bullet from the magazine 27 will fall downwards upon the tubular member 12, at the rear end thereof, to take the place of the bullet which has been forced upon the conveying element 24.

When the shuttle 17 reaches its rearwards position, the cam element 26 will have been fully released and the conveying element 24 will have moved upwards to its raised position. At this moment the fired shell will be knocked free from the shuttle 17 by the pin 49, and will fall out through the opening 43. This immediately releases the pin 47 which will be forced forwards by the spring 28 and which will start the new bullet into the barrel. Then the recoil springs 21 get into motion and start moving the shuttle 17 forwards. The forward motion of the shuttle will complete the insertion of the new bullet into the barrel and will cause the retraction of the pin 27.

The forward motion of the shuttle 17 will force the conveying element 24 down to its original position so that it is ready for the next bullet. The forward motion of the shuttle 17 also released the rack finger 22 which is then moved upward by the spring 49. This causes the

gear 44 to rotate in the reverse and to indirectly move the carrier element 13 rearwards back to its original position. The bullets upon the flanges 12^a will remain stationary, while the pawls 14 duck beneath them during the rearward motion of the carrier element 13. Then in the completed rearward position, the pawls 14 will move upwards behind the bullets. The device is now ready to repeat its operation.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:—

1. In a gun, a hollow butt and barrel connected therewith, a carrier element within said hollow butt for advancing bullets toward said barrel, a repercussion shuttle connected with said barrel for firing said bullets, and means within said butt adapted to be acted upon by said shuttle to periodically advance said carrier element to move said bullets toward said barrel, comprising a rack attached to said carrier element, a pinion rotatively mounted in said gun butt, a gear fixedly connected coaxial with said pinion and meshing with the teeth on said rack, and a rack finger pivotally mounted in said butt and extending in the path traversed by said shuttle when it moves rearwards and having teeth meshing with said pinion, whereby said shuttle is forced rearwards by a fired shell to depress said rack finger to rotate said pinion and gear to move said rack which in turn advances the bullets on said carrier element.

2. In a gun, a hollow butt and barrel connected therewith, a carrier element within said hollow butt for advancing bullets toward said barrel, a repercussion shuttle connected with said barrel for firing said bullets, and means within said butt adapted to be acted upon by said shuttle to periodically advance said carrier element to move said bullets toward said barrel, comprising a rack attached to said carrier element, a pinion rotatively mounted in said gun butt, a gear fixedly connected coaxial with said pinion and meshing with the teeth on said rack, and a rack finger pivotally mounted in said butt and extending in the path traversed by said shuttle when it moves rearwards and having teeth meshing with said pinion, whereby said shuttle is forced rearwards by a fired shell to depress said rack finger to rotate said pinion and gear to move said rack which in turn advances the bullets on said carrier element, said rack finger comprising an arm portion having one of its ends pivotally mounted in said hollow butt, and an arcuate portion extending at right angles from the other end of said arm portion, and teeth formed on the inner edge of said arcuate portion and meshing with the teeth on said pinion.

3. In a device of the class described, a carrier system, comprising a tubular member for extending along the bottom side of a hollow gun butt and having an open top slot and an elongated side slot, flange portions extending upward from said tubular member on either side of said top slot for supporting bullets, a carrier element slidably mounted within said tubular member, pins extending from the side of said carrier element and through said elongated side slot, a carrier

rack mounted on said pins, means engaging said carrier rack to move said rack which in turn moves said carrier element, and means on said carrier element for urging said bullets along said tubular member when said carrier element is moved by said first-mentioned means.

4. In a device of the class described, a carrier system, comprising a tubular member for extending along the bottom side of a hollow gun butt and having an open top slot and an elongated side slot, flange portions extending inward from said tubular member on either side of said top slot for supporting bullets, a carrier element slidably mounted within said tubular member, pins extending from the side of said carrier element and through said elongated side slot, a carrier rack mounted on said pins, means engaging said carrier rack to move said rack which in turn moves said carrier element, and means on said carrier element for urging said bullets along said tubular member when said carrier element is moved by said first-mentioned means, said latter-mentioned means comprising, a plurality of spaced pawls pivotally mounted within said carrier element and engaging one end of said bullets to advance said bullets along said tubular member when said carrier element is moved, and flexible lugs stamped from one of said flanges and being of a sufficient resiliency to permit said bullets to advance and to act as stops to prevent said pawls from retracting said bullets when said

carrier element moves back to its normal position.

5. In a device of the class described, a carrier system, comprising a tubular member for extending along the bottom side of a hollow gun butt and having an open top slot and an elongated side slot, flange portions extending upward from said tubular member on either side of said top slot for supporting bullets, a carrier element slidably mounted within said tubular member, pins extending from the side of said carrier element and through said elongated side slot, a carrier rack mounted on said pins, means engaging said carrier rack to move said rack which in turn moves said carrier element, and means on said carrier element for urging said bullets along said tubular member when said carrier element is moved by said first-mentioned means, said latter-mentioned means comprising, a plurality of spaced pawls pivotally mounted within said carrier element and engaging one end of said bullets to advance said bullets along said tubular member when said carrier element is moved, and flexible lugs stamped from one of said flanges and being of a sufficient resiliency to permit said bullets to advance and to act as stops to prevent said pawls from retracting said bullets when said carrier element moves back to its normal position, springs acting between said pawls and the bottom wall of said carrier element to urge said pawls to their raised positions.

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