ABSTRACT: A gunlock having a hammer which pivotally mounts a ratchet member. A separate sear includes a pawl element which engages the ratchet member upon cocking of the hammer. A coil spring device bears against the ratchet so that release of the sear by a trigger causes rapid rotation of the ratchet and commensurate striking of the hammer.
LOCK FOR PERCUSSION CAP RIFLE

The present invention relates to a gunlock or percussion cap igniting mechanism.

In all muzzle loading guns, a charge of powder, wad or the like igniting substance is placed in a firearm chamber by a rod. A ball or like missile is placed next to the charge and the wadding is tamped in. More recent devices for igniting the charge incorporate a percussion cap which is placed in a hollowed holder communicating with the aforementioned chamber. Upon depression of a trigger, the hammer strikes the percussion cap producing a spark which travels into the chamber thereby igniting the charge therein. An explosion results in the chamber which propels the missile through the rifle barrel bore, the latter communicating with the explosion chamber.

In the past, percussion cap igniting mechanisms have included a hammer which may be retained in a cocked position by pawl and ratchet members. Toggle linkages are connected between the pawl and ratchet members and an actuating trigger whereby depression of the trigger causes striking motion of the hammer to a firing position. However, the toggle linkage incorporated in such an ignition mechanism usually includes a large number of pivotally related parts which decreases the reliability of the mechanism. Further, such rotating parts are prone to wear with age and contribute to rapid deterioration of the mechanism's utility.

The invention includes a percussion cap hammer which is connected to a trigger mechanism by means of interconnected pawl and ratchet members. The present ignition mechanism reduces the number of pivotal rotating components previously incorporated by prior art devices. The present ignition mechanism is simple in structure and relatively inexpensive to fabricate. Further, the inclusion of a minimum number of pivotally mounted parts contributes to increased reliability and life expectancy as compared to past devices.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a side elevational view illustrating the disposition of the present lock mechanism on a percussion cap rifle.

FIG. 2 is a longitudinal sectional view of the present invention illustrating the interior components thereof.

FIG. 3 is a top plan view of the present invention as secured to the stock of a rifle.

FIG. 4 is a partial side elevational view illustrating the interior or components of the invention with the firing hammer in an uncocked position.

FIG. 5 is a view similar to FIG. 4 with the hammer being displaced to a cocked position.

FIG. 6 is a disassembled view illustrating each component of the present invention.

Referring to the FIGS. and more particularly FIG. 1, the present lock for a percussion cap rifle is denoted by reference numeral 10 which is mounted to a side surface of a muzzle loading rifle stock 14 in the usual manner. A trigger 12 is mechanically coupled to a hammer 18 for causing the same to strike downwardly when the trigger is depressed. A firing cap 16 is placed within a conventional cap holder 15 which communicates with the firing chamber (not shown). The trigger 12 is generally fabricated as a separate member which is adapted to engage the seat of the percussion cap firing mechanism 10 as hereinafter explained.

Referring to FIG. 6, it will be seen that the ignition mechanism includes a hammer head portion 18 integrally connected with an arcurate line 20 terminating at an outward end thereof in a substantially circular termination 22 having a square-shaped aperture 24 disposed centrally therein. The hammer neck and terminal portions 20 and 22 respectively are mounted in sliding contact with a generally banana-shaped plate 26 having an upper arcuate edge 28 stepping down to a second upper edge portion 30. A blocklike element 32 is mounted to plate 26, intermediate edges 28 and 30. The block element includes a semicylindrical slot 34 formed inwardly of the top surface thereof to accommodate a percussion cap holder 15 as seen in FIG. 1. A threaded aperture 36 is formed through the block element 32 to permit the insertion of a suitable fastener therethrough for fastening plate 26 to the stock 14 of a rifle. Member 38 having a threaded aperture 40 therein is attached to the inward surface of plate 26 and serves to receive a hollowed through setscrew 42.

A mainspring assembly 43 includes an elongated rod 44 which mates a similarly elongated compression spring 46 thereon. A first end of rod element 44 is adapted to be inserted within nut member 38. The hollow setscrew 42 is adapted to pass through nut member 38, the end of the setscrew which passes through nut member 38 contacts an adjoining end of mainspring 46 so that the compressed displacement of spring 46 on rod element 44 may be varied as the engagement between hollow setscrew 42 and nut member 38 is varied. The opposite end of rod element 44 extends to an axially disposed projection 48. The projection 48 and the adjoining end of rod element 44 are separated by a rectangular shoulder element 50.

A ratchet member 52 is disposed between hammer 18 and the rifle trigger 12. The ratchet member is seen to include a key element 54 having a square cross section so that the key is adapted for insertion within a squareway 24, the latter being formed in the terminal end portion 22 of the hammer head 18. The ratchet member body itself includes a rounded end 56 which perpendicularly mounts the key element 54. The toothlike projection 58 extends outwardly from ratchet member 52 from a side of the ratchet member opposite the rounded end 56. The latter mentioned side of the ratchet member further includes additional ratchet teeth 60 and 62. When rotating the hammer 18 rearwardly to a cocked position, ratchet 52 is similarly rotated due to the key connection therebetween.

A sear 64 serves to engage ratchet 52 thereby retaining hammer 18 in a cocked position. In particular, the sear 64 includes an offset portion 66 extending perpendicularly from an elongated linkage portion 68 which terminates at the outward end thereof in a pawl 70 having a single pawl tooth 72 extending therefrom. An aperture 74 is centrally formed within pawl 70. A bore 76 is formed transversely of bore 74 within pawl 70. The first end of a small compression spring 78 is adapted to be received within bore 76.

Referring to FIG. 5, the disposition of spring 78 is more clearly shown. As indicated, the opposite end of spring 78 is received within a bore 80 formed in a triangular projection 82, the latter being part of circular disclike bridge 84. Inclusion of the latter-mentioned spring device retains the mating pawl and ratchet members in engagement. The bridge 84 includes apertures formed therein and denoted by 86 and 88. A central portion of mounting plate 26 includes apertures 86' and 88' therein for alignment with apertures 86 and 88 so that bridge 84 may be mounted to plate 26 by suitable fasteners such as screws 90 and 92. As seen in FIG. 2, the circularly shaped bridge 84 serves as a dust cover for the pawl and ratchet members.

A third aperture 94 is formed in bridge 84 for receiving a pin projection 93 which is mounted on ratchet member 52 and extends oppositely with respect to key element 54. A fourth aperture 95 is formed in bridge 84, the latter-mentioned aperture being smaller than the previously discussed apertures. Aperture 95 permits the introduction of oil therethrough for lubricating the moving parts of the ignition mechanism.

A hollowed cylindrical extension 96 is mounted on the inner surface of plate 26. The extension includes an axially threaded bore into which setscrew 100 is threaded. A second threaded aperture is formed transversely of the first aperture and receives a second setscrew 98 which is axially adjustable.

Screw 98 serves as a mechanical limit stop by contacting pawl element 70 when hammer 18 is displaced to a cocked position with setscrew 100 serving to lock screw 98 in the adjusted
position. It will be noted from the Fig. that in this position, pawl element 72 engages ratchet tooth 60 on ratchet member 52. By adjusting the position of screw 98 with respect to the pawl element 76 of sear 64, the displacement of a trigger 12 for firing the firearm is varied as desired.

In summarizing the operation of the present invention, reference is made to Fig. 4 which illustrates the hammer 18 in the uncocked position. It will be noted that projection element 48 connected to the mainspring assembly 43 engages the surface of ratchet tooth 58. The oppositely disposed surface of the ratchet tooth engages pawl tooth 72 of sear member 64. By drawing hammer 18 back, the ignition mechanism is cocked as illustrated in Fig. 5 wherein it is shown that ratchet member 52 is rotated clockwise due to the keyed connection between hammer 18 and the ratchet member 52. Rotation of the ratchet member causes compression of the mainspring 46. Further, relative motion between the ratchet member and the pawl element of sear 64 has occurred so that the pawl tooth 72 engages the mating surface of tooth 60 on the ratchet member 52. The combination of compressive forces due to mainspring 46 acting on ratchet member 52 and spring 78 acting on pawl element 70 retain hammer 18 in the cocked position.

Referring to Fig. 2, it will be noted that trigger 12 includes an extension 102 adapted to engage the offset portion 66 of sear 64. Thus, upon depression of trigger 12, the sear is rotated upwardly thereby causing disengagement between the pawl and ratchet shown in Fig. 5. It will be noted that mainspring 46 is in a compressed state so that upon disengagement between the pawl and ratchet, projection 48 causes rapid upward pivotal movement of ratchet member 52 which in turn causes the downward striking motion of hammer 18.

Referring to Fig. 1, it will be seen that the downward displacement of hammer 18 causes an impact with percussion cap 16 which in turn causes firing of the firearm as hereinafter explained.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

We claim:

1. A percussion cap igniting mechanism for firing a projectile in response to actuation of a trigger comprising a plate member, a hammer, means pivotally mounting the hammer to the plate member, a sear having a portion thereof for contacting a trigger, said sear having a pawl element, a ratchet member connected in locking engagement with the hammer for rotation therewith, the pawl element of the sear being engageable with the ratchet member upon cocking of the hammer and means for causing striking return of the hammer in response to disengagement between the sear and ratchet member, said means for causing a striking return of the hammer in response to disengagement between the sear and the ratchet member including a mainspring a rod element mounting the mainspring, and a projecting element axially connected to the rod element, an adjustable mainspring compressing means which causes a compressive force to be exerted against the ratchet member resulting in rapid rotation of the ratchet member upon disengagement between the ratchet member and the sear, and a bridge member mounted to the plate member, the bridge member including a bore therein, a bore formed in the sear, and a spring member received at opposite ends thereof in the bores for retaining the ratchet member and sear in engaging relation.

2. An assembly as disclosed in claim 1 wherein said mainspring compressing means includes an adjusting means whereby the spring can easily be removed by releasing all of the tension on the spring by rotating the adjusting means.

3. A percussion cap igniting mechanism as described in claim 1 wherein the bridge member has a bore in it which provides the ability to add oil to all of the moving parts of said percussion cap igniting mechanism.

4. A percussion cap igniting mechanism as described in claim 1 wherein said bridge member being designed as a circular unit that is easily manufactured by a screw machine thus decreasing the cost of the manufacturing.

5. The assembly in claim 4 wherein the bridge member acts as a cover for the moving parts to protect them from dirt.