April 25, 1933. H. F. NELSON 1,905,737

TOY GUN

Filed March 14, 1932

Fig. 1.

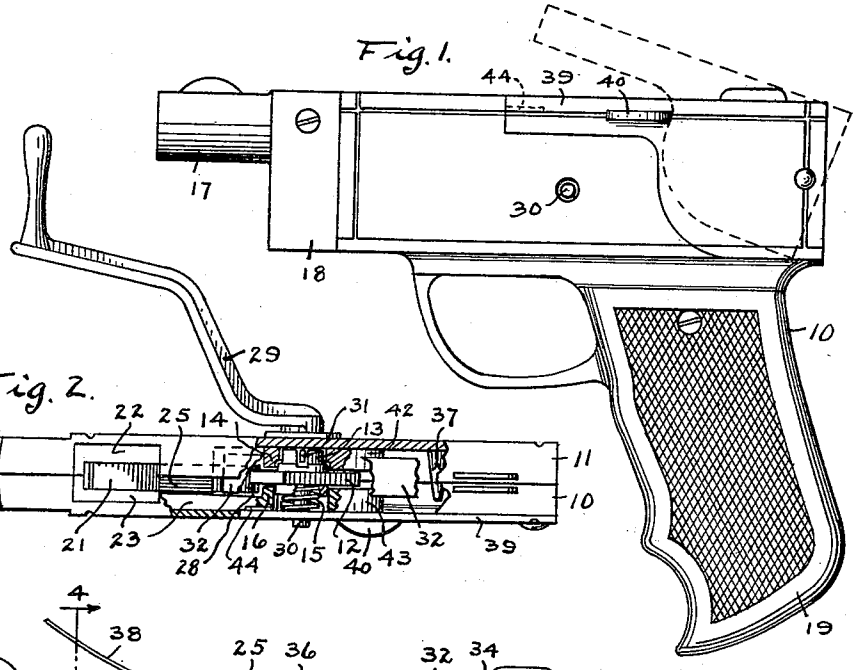


Fig. 2.

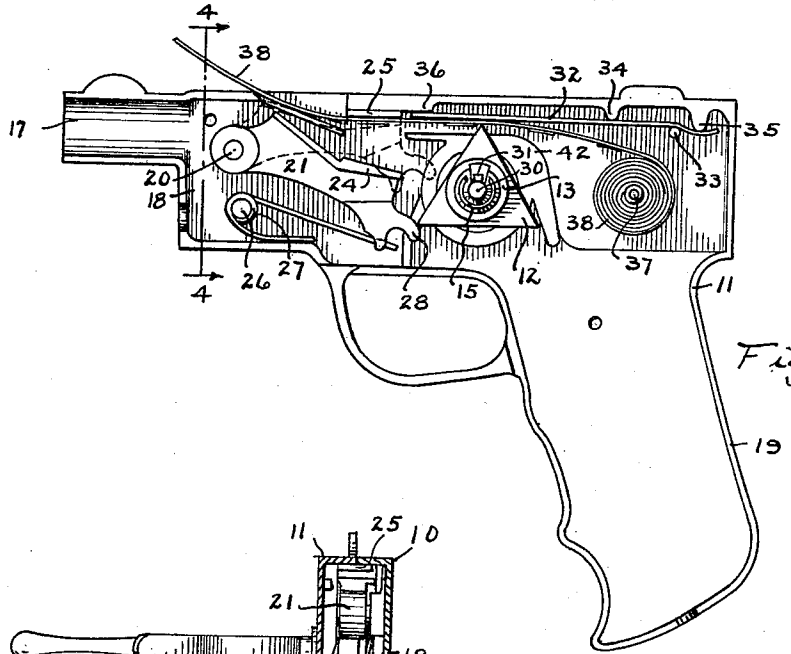


Fig. 3.

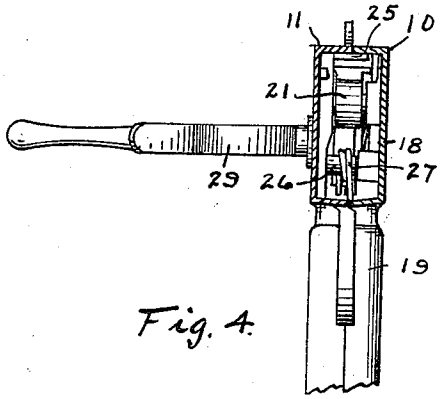


Fig. 4.

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Patented Apr. 25, 1933 1,905,737

UNITED STATES PATENT OFFICE

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TOY GUN

Application filed March 14, 1932. Serial No. 598,591.

This invention relates to the art of toy percussion cap pistols and has for one of its primary objects the provision of a mechanism for the intermittent feeding of a cap bearing tape past a firing hammer whereby the caps may be detonated one after another in simulation of a repeating or machine gun fire.

A further important object of the invention is to provide a firing hammer to be operated in sequence with the tape feeding mechanism whereby the hammer is being moved to the recoiled position while the tape is being shifted to bring the next cap on the tape over an anvil against which the hammer is automatically directed upon the completion of that shift.

Other important objects of the invention are to provide a very simple compact structure of but few and simple parts in order that the toy gun may be manufactured and sold at a very low price; to provide a toy gun that is safe in the hands of children; and to provide hand operated means for actuating said feeding mechanism whereby the caps may be detonated one after another at the speed desired by the operator.

These and other objects and advantages will become apparent in the following description of the invention as illustrated by the accompanying drawing, in which

Fig. 1 is a left hand side elevation of a structure embodying my invention;

Fig. 2, a fragmentary top plan view of the structure;

Fig. 3, a left hand side elevation of the structure with the left half of the housing removed; and

Fig. 4, a vertical transverse section on the line 4—4 in Fig. 3.

Like characters of reference indicate like parts throughout the several views in the drawing.

I form a shell-like housing in two sections—a left hand section 10 and a right hand section 11—to have a close resemblance to a pistol or revolver of the automatic type. These sections 10 and 11 are substantially symmetrical and have their dividing plane longitudinally through the central vertical plane of the gun. The left hand section 10 is employed essentially as a cover, while the operating mechanism is mounted on the right section in assembly, the cover being employed to cooperate with the other section in retaining the moving parts in operative positions. The sections 10 and 11 when brought together form a short barrel 17 protruding from the end of a box-like body 18, and a hand grip 19 extends downwardly from the body 18.

A cam 12 is formed to have a plurality of projections about its periphery here shown as three in number and being triangular shaped. This cam 12 is provided with a central hub portion 13 with a hole horizontally carried therethrough tapering from one side to the other to produce a conical bore. The section 11 within the body 18 toward its center, is provided with a cupped-boss 14 into the cup of which is inserted rotatively the end of the hub 13 which has the smaller end of the bore therein. This end of the hub is slotted. A compression spring 15 is fitted by one end into the hub bore from its larger end and is adapted to be compressively engaged by its other end by the section 10. That part of the hub 13 surrounding the spring 15 is rotatively received in a cupped boss 16 projecting inwardly from the section 10. The cam 12 is thus rotatively mounted between the two bosses 14 and 16 and is spring pressed laterally against the section 11.

Forwardly and somewhat above the horizontal center line of the cam 12 is a fixed pin 20 extending horizontally from the section 11 within the body 18 and on this pin is rotatively mounted the hammer 21. Above the central portion of this hammer 21, both of the sections 10 and 11 are cut away to leave a central rectangular opening through the top side of the body 18 and from the forward edge of this opening inclined ledges 22 and 23 are formed on the respective sections to slope downwardly and rearwardly to under and at a distance below the rear edge of that opening. The upper edge of the hammer is formed to enter between these ledges when in its uppermost

position to fill in the gap therebetween and form a continuous horizontal floor thereacross. The upper wall of the body 18 on the section 11 immediately at the rear of the opening is dropped down to form a horizontally disposed surface for an anvil 25 thereunder against which the head 24 of the hammer 21 may be brought. This anvil 25 extends horizontally to under the top wall of the section 10.

Below the pin 20 is another pin 26 horizontally extending from the side of the section 11. A torsion spring 27 is formed to have a central eye of one or more turns of wire placed over this pin 26 and to have one end pressing upwardly against the underside of the hammer 21 with the other end bearing against the lower horizontal wall of the body 18 in the section 11 whereby the spring normally rocks the hammer to carry the head 24 against the anvil 25. The rear end of the hammer 21 is provided with a down-turned rounded arm 28 of a length to extend to within the path of the projections on the cam 12.

The two sections 10 and 11 are provided with holes aligning with the bore through the hub 13. A crank 29 is formed with a shaft 30 adapted to be inserted through the hole in the section 11 and passed on through the hub bore to extend out through the hole in the other section. The shaft 30 carries a projecting key 31 of a size to enter into the slot in the hub 13 whereby rotation of the crank will turn the cam 12. A leaf spring 32 is carried by the section 11 by slipping its rear end over a pin 33 and under the two downwardly extending lugs 34 and 35 to have the forward free end of the spring disposed over the cam 12. A stop 36 is formed immediately back of the anvil 25 to limit the upward movement of the end of the spring although the spring back of the stop may be pushed upwardly by the projections on the cam 12 as they may be carried around under the spring. A tape-roll pin 37 is provided back of the cam 12 in a fixed position extending from the section 11, on which pin a roll of tape 38 may be rotatively placed. The left hand section 10 is provided with a door 39 which may be lifted by pulling out and pushing up on the lip 40, as indicated by the dash lines in Fig. 1, in order that the roll 38 may be placed on the pin 37. The door also has an elongated forwardly extending portion which uncovers the space immediately below the spring 32 extending to the anvil 25. A tape guide is formed by ledges 42 and 43 extending horizontally from each section and carried upwardly and forwardly along each side of the cam 12.

The tape is carried from the roll over these ledges 42 and 43 to under the spring 32 and along thereunder over the cam 12, under the anvil 25, over the hammer 21 and out through the opening above the hammer. The cam 12 is rocked by the crank 29 to carry the cam projections and hammer head down out of the way so as to permit the free threading of the tape through the gun as indicated. The door 39 is then dropped to be held in place by the lug 44 on the inner side of the door dropping under the edge of the body top wall. By grasping the handle or grip 19 in one hand of the operator, the crank 29 is then turned by the other hand in the direction to have the projections on the cam 12 come up from the rear to come into contact with the tape and press it up against the spring 32. By thus forcing the tape against the yielding spring, sufficient pressure of the cam projection is created to drag the tape forwardly until that projection revolves down away from the tape to be relieved of its pressure thereagainst. As the cam is turned around, to relieve the pressure on the tape, another projection slides over the arm 28 on the hammer 21 carrying the hammer down and then moves on to allow the spring 27 to snap the hammer back to its upper position to cause the head 24 to strike a sharp blow against the tape then stationary under the anvil 25 to detonate the cap in the tape by driving it against the anvil 25 above. Continued revolving of the crank 29 carries the tape intermittently across under the anvil, moving on the detonated portion and bringing up the undetonated portion while the hammer is released in timed sequence to strike the tape while at rest and lowered while the tape is being shifted. The cam 12 cannot be turned backwards since the projections thereon would come up under the arm 28 when the hammer is in its top-most position and hence cannot move out of the way.

While I have here shown my invention in the form as now best known to me, it is obvious that structural changes, such for example as varying the number of points or projections on the cam, may be made without departing from the spirit of the invention, and I, therefore do not desire to be limited to that precise form beyond the limitation as may be imposed by the following claims.

What I claim as new is:

1. In a toy gun adapted to detonate percussion caps carried by a tape, a reciprocating hammer, an anvil against which the hammer in the form of an equilateral triangle may strike, a cam adjacent said hammer, a tape passageway across said cam leading to said anvil, a projection on said cam adapted to press said tape against a wall of said passageway upon revolution of the cam and drag the tape therealong across said anvil, a spring normally urging said hammer toward the anvil, a member on the hammer

adapted to be intercepted by said cam projection to pull the hammer away from the anvil and to be released upon continued travel of the projection therepast to allow said spring to return the hammer sharply against the anvil having an extension with an outwardly curved edge, and means for revolving said cam.

2. In a toy gun employing a percussion cap bearing tape, a rotative cam having three equidistant straight sided projections therearound, a wall above the cam against which said projections may successively press said tape to drag it along the wall intermittently, an anvil over which the tape is shifted, a hammer, a spring normally urging the hammer against the anvil, said hammer extending into the path of said cam projections when near said anvil and having an out-curved edge to contact the cam, said cam projections being spaced apart to have one projection push and hold said hammer away from the anvil while another projection is shifting said tape across the anvil and releasing the hammer as the tape comes to rest upon rotation of the cam, and means for revolving the cam.

3. In a toy gun employing a percussion cap bearing tape, a rotative cam having three equidistant straight sided projections therearound, a wall above the cam against which said projections may successively press said tape to drag it along the wall intermittently, an anvil over which the tape is shifted, a hammer, a spring normally urging the hammer against the anvil, said hammer extending into the path of said cam projections when near said anvil, and having an out-curved edge to contact the cam said cam projections being spaced apart to have one projection push and hold said hammer away from the anvil while another projection is shifting said tape across the anvil and releasing the hammer as the tape comes to rest upon rotation of the cam, and means for revolving the cam, said wall comprising a leaf spring supported at one end by a step extension of the anvil to direct the tape to the anvil base, said wall yielding only between its ends upon pressure of the tape thereagainst by the cam projections.

4. In a toy gun employing a percussion cap loaded tape, a central hollow body, a toothed cam rotatively supported between the side walls of the body, a hammer pivoted between said walls to reciprocate vertically, an anvil at the upper side of the body, a spring normally driving the hammer against the anvil, said body having an opening in front of the anvil, a tape roll mounting pin extending horizontally from one of said walls back of said cam, a leaf spring disposed across the upper side of the cam, a tape passageway comprising ledges formed integrally with the hollow body over said cam directed toward and under said anvil. and an arm on the hammer normally extending into the path of the teeth on said cam, and a door in one of said walls formed to cover over the space about said pin and to cover over said passageway whereby the door may be opened to place a roll of tape on said pin and thread it over the ledges over said cam, under the anvil and out said top opening.

5. In a toy gun to detonate percussion caps served by a tape, a two-part body divided longitudinally through the central plane of the gun, both of said parts being provided toward their centers with opposite cupped bosses, an anvil supported by the body, a hammer, a spring impacting the hammer against the anvil, a cam having projections to retract the hammer and spring and release the hammer at its maximum retraction, said cam having a central hub projecting from both sides with a bore in the hub, said hub being seated in the cupped bore of one body part, a compression spring fitted by one end in one end of the bore and having that part of the hub surrounding the spring seated in the cupped boss of the other body part, and means for rotating the cam.

6. In a toy gun to detonate percussion caps served by a tape, a two-part body divided longitudinally through the central vertical plane of the gun, both of said parts being provided toward their center with opposite cupped bosses, an anvil supported by the body, a hammer, a spring impacting the hammer against the anvil, a cam having projections to retract the hammer and spring and release the hammer at its maximum retraction, said cam having a central hub projecting from both sides with a bore in the hub, said hub being seated in the cupped bore of one body part, a compression spring fitted by one end in one end of the hub bore and having that part of the hub surrounding the spring seated in the cupped boss of the other body part, ledges extending from each body part upwardly and forward from rear to front of the body bosses to form a tape guide and means for rotating the cam to feed the tape over the guide to the anvil and to operate the hammer.

7. In a toy gun to detonate percussion caps served by a tape, a two-part body divided longitudinally through the central vertical plane of the gun, both of said parts being provided toward their centers with opposite cupped bosses, an anvil supported by the body, a hammer, a spring impacting the hammer against the anvil, a cam having projections to retract the hammer and spring and release the hammer at its maximum retraction, said cam having a central hub projecting from both sides with a conical bore therethrough, that end of the hub

having the large end of the bore being seated in the cup of a boss on one of the body members, a compression spring having one end fitted in the small end of the hub bore and its other end in the cup of the boss of the other handle part to press the hub and cam against the first body part, and means to rotate the cam.

In testimony whereof I affix my signature.

HENRY F. NELSON.