Aug. 10, 1948. M. M. FUJIWARA 2,446,698

TOY CAP GUN

Filed Dec. 18, 1946 4 Sheets-Sheet 1

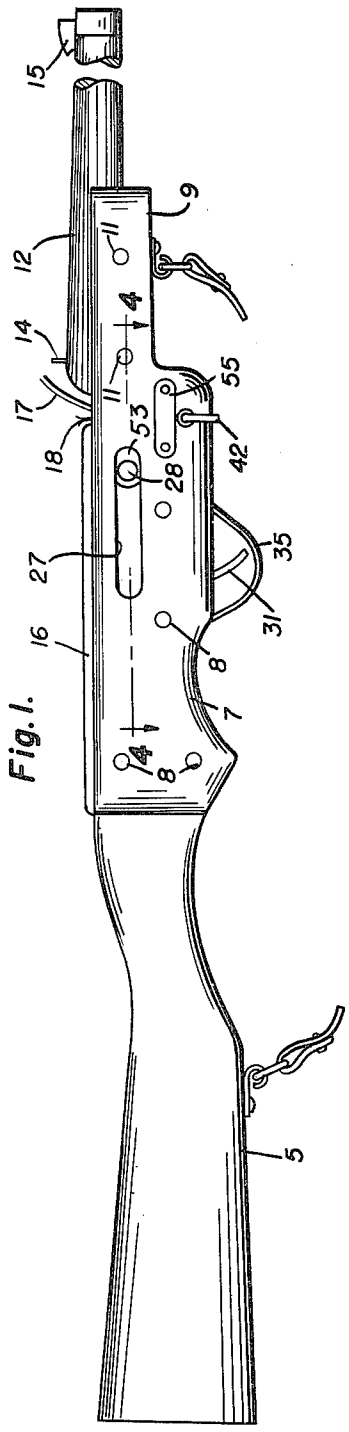


Fig. 1.

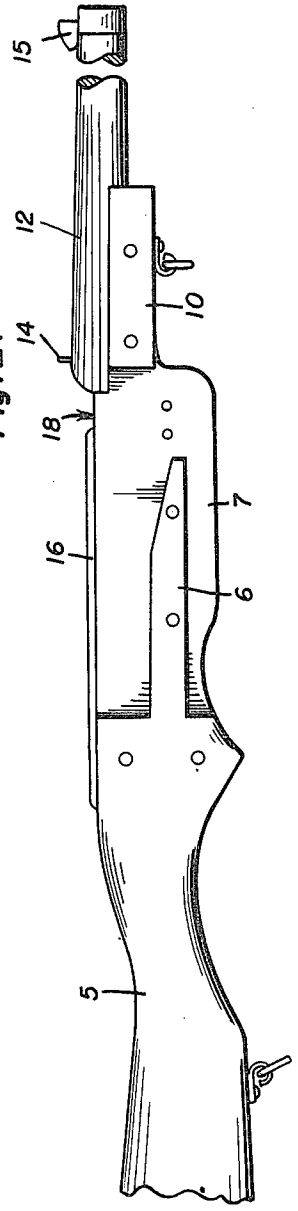


Fig. 2.

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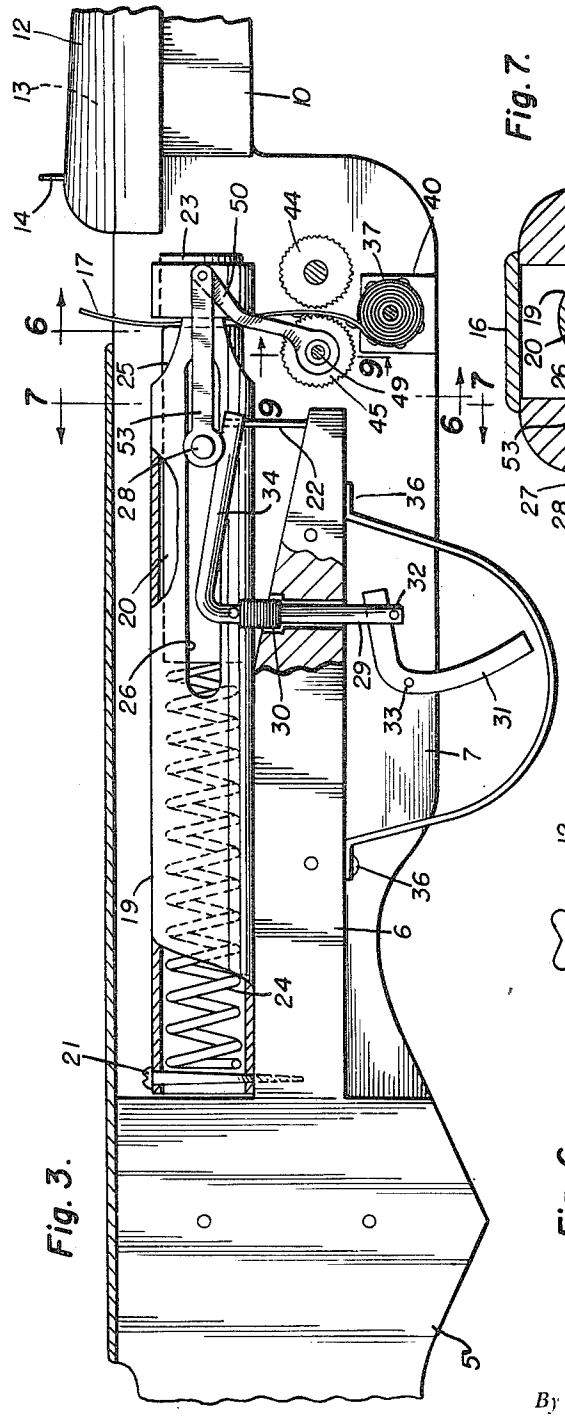


Fig. 3.

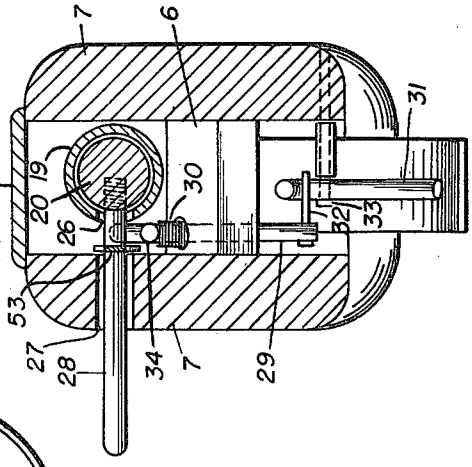


Fig. 7.

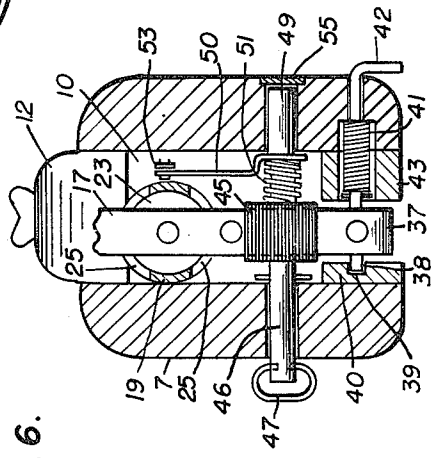


Fig. 6.

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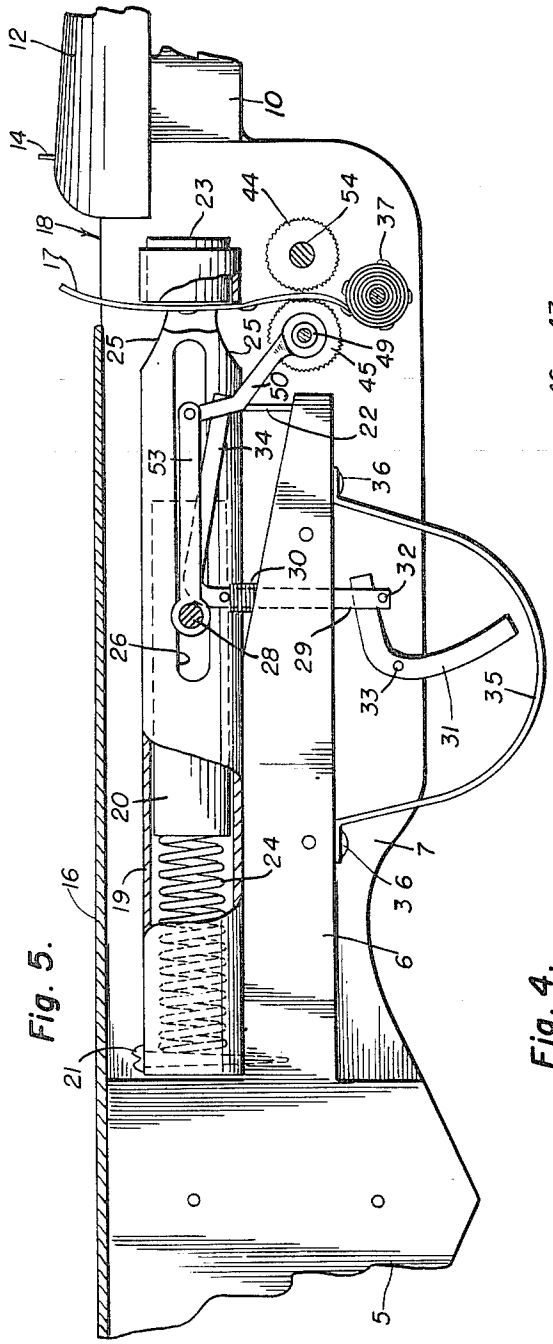


Fig. 5.

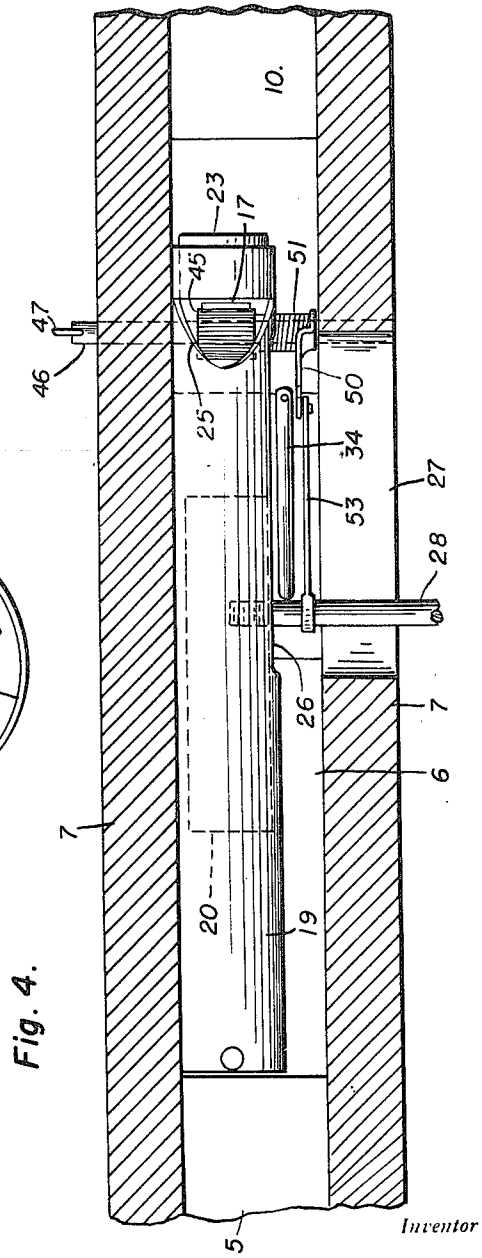


Fig. 4.

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Fig. 8.

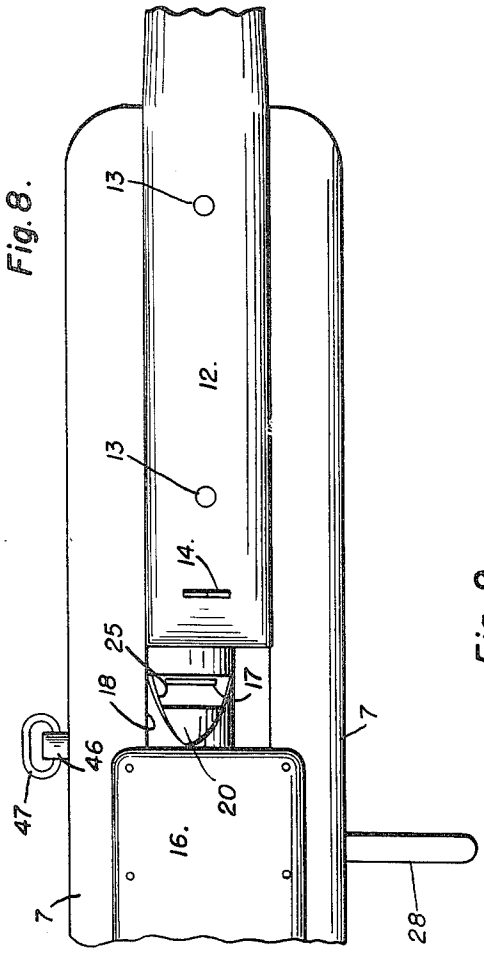


Fig. 9.

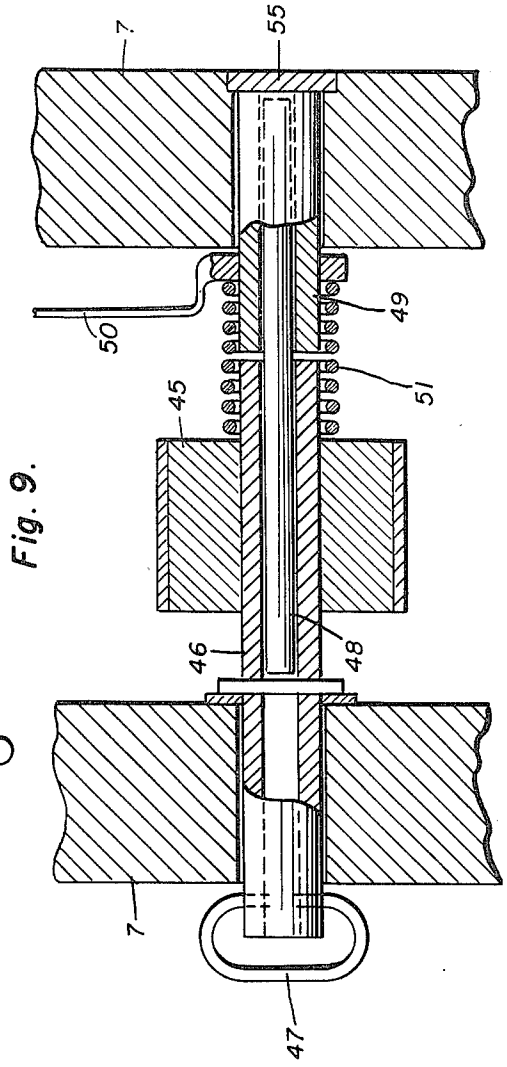
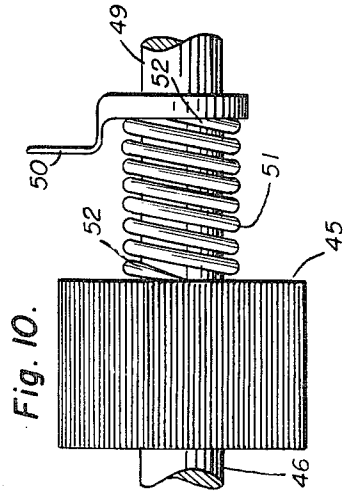


Fig. 10.



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UNITED STATES PATENT OFFICE

2,446,698

TOY CAP GUN

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Application December 18, 1946, Serial No. 716,975

5 Claims. (Cl. 42—57)

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This invention relates to a novel toy cap gun embodying a spring projected sliding hammer adapted to be manually cocked after each cap firing operation, and a trigger operable to release the cocked hammer so as to effect firing of another cap brought into position for being struck by the hammer.

An important object of the present invention is to provide simple and efficient means for retracting the hammer to cocked position and for releasably holding the hammer cocked.

Another object of the invention is to provide simple and efficient means actuated by the hammer for feeding a cap strip so that a new cap is brought into position for being struck by the hammer each time the hammer is retracted to cocked position.

Another object of the invention is to provide a gun of the above kind which is comparatively simple in construction, durable, and efficient in operation.

More specific objects and features of the invention will become apparent from the following description when considered in connection with the accompanying drawings, in which:

Figure 1 is a side elevational view, partly broken away, of a toy cap gun constructed in accordance with the present invention.

Figure 2 is a view somewhat similar to Figure 1, with a side plate and the cap feeding and firing mechanism removed.

Figure 3 is an enlarged fragmentary view of a portion of the gun shown in Figure 1, with a side plate removed to reveal details of the cap feeding and firing mechanism, parts being in side elevation and partly broken away and in section.

Figure 4 is an enlarged fragmentary horizontal section taken substantially on line 4—4 of Figure 1.

Figure 5 is a side elevational view of the construction shown in Figure 4, with a side plate removed to reveal the cap feeding and firing mechanism.

Figure 6 is a transverse section taken on line 6—6 of Figure 3.

Figure 7 is a transverse section taken on line 7—7 of Figure 3.

Figure 8 is an enlarged fragmentary top plan view of substantially that portion of the gun constituting the forward portion of Figure 3.

Figure 9 is an enlarged fragmentary transverse section taken on line 9—9 of Figure 3.

Figure 10 is an enlarged detail view of the cap strip feeding roller, the actuating lever therefor, and the spring which provides a ratchet driving connection between said lever and said roller.

Referring in detail to the drawings, the illustrated form of the invention includes a suitable stock 5 having a tang extension 6 on its forward end. Side plates 7 are secured to opposite sides of

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the tang extension 6 and the adjacent end portion of the stock 5 by means of screws 8 or the like, and these plates extend above and below the tang extension 6 as well as forwardly thereof, and terminate in reduced forward end portions 9. A spacing block 10 is secured between the reduced end portions 9 of side plates 7 by means of screws 11 or the like, and the rear portion of an imitation barrel 12 is seated upon the spacing block 10 and fitted between the reduced ends 9 of plates 7, being secured to said spacing block 10 by screws 13 or the like. The barrel 12 may be provided with sights 14 and 15, and the top of the space between the side plates 7 and above the tang extension 6 is partially closed by means of a cover plate 16 secured upon the side plates 7 and the adjacent end portion of stock 5, the forward end of cover plate 16 terminating in spaced relation to the rear end of the barrel 12 so as to leave an exit opening for the cap strip 17 as at 18. This provides a chamber between the plates 7 and above the tang extension 6 in which is longitudinally disposed a guide cylinder 19 for a sliding hammer 20. The guide cylinder 19 is anchored at 21 and 22 to the tang extension 6 and disposed upon the latter. Secured in the forward end of the guide cylinder 19 is an anvil block or cylinder 23 adapted to provide a backing for the cap strip 17 so that the hammer 20 will strike and fire a cap of the strip 17 when positioned for being struck by the forward end of the hammer 20 upon projection of the latter. A helical compression spring 24 is disposed in the guide cylinder 19 behind the hammer 20, the arrangement being such that when the hammer 20 is retracted the spring 24 is placed under compression sufficient to project the hammer 20 with considerable force and for a sufficient distance to impact and fire the cap of the strip 17 positioned at the rear end of the anvil 23. Near its forward end or directly at the rear of the anvil 23, the guide cylinder 19 is provided at the top and bottom with slots 25 so as to permit upward passage of the cap strip 17 through the guide cylinder directly at the back of the anvil 23. One side of the guide cylinder 19 and the adjacent side plate 7 are provided with corresponding horizontal elongated slots 26 and 27, respectively. A handle rod 28 is rigidly attached to one side of the hammer 20 and projects freely through the slots 26 and 27 and outwardly beyond the plate 7 in which the slot 27 is provided. Thus, the handle rod 28 may be grasped for manually retracting the plunger 20 against the action of spring 24 to cocked position. A sear 29 is vertically slidable through the tang extension 6 and is normally elevated by a compression spring 30 into the path of the handle rod 28 so that the latter may be engaged behind the upper end of the sear 29 for releasably holding the hammer 20 in cocked position. A piv-

oted trigger 31 is operatively connected to the lower end of sear 29 for pulling the latter downwardly upon pressing rearwardly on the trigger so as to disengage the sear from the handle rod 28 and thereby permit projection of the hammer 20 by the spring 24. The trigger 31 has a forward arm extending across a lateral pin 32 carried by the lower end of the sear 29 as shown in Figures 5 and 7, the trigger being pivoted intermediate its ends to one of the side plates as at 33. A forwardly extending and inclined extension 34 is provided on the upper end of the sear 29, on which the hammer handle rod 28 rides to depress the sear when the hammer is retracted to cocked position and to render it unnecessary to depress said sear by actuation of the trigger 31 in order to allow movement of the handle rod 28 rearwardly past the upper end of the sear. For this purpose, the extension 34 extends forwardly beyond the forward limit of movement of the handle rod 28 as shown in Figure 3. Thus, after the hammer 20 is projected, it is only necessary to grasp the handle rod 28 and manually retract the hammer until it passes rearwardly of the sear 29, the spring 30 then immediately elevating the sear so that the hammer handle rod 28 is engaged behind the upper end of the sear to hold the hammer in cocked position. A trigger guard 35 extends under the trigger 31 and upwardly in front of and behind the latter, the ends of said trigger guard being attached at 36 to the underside of the tang extension 6. As shown, the trigger 31 is of angular form or in the form of a bell-crank lever with the upper arm thereof extended forwardly over the pin 32 and from the pivot 33.

The cap strip 17 is arranged in a roll 37 and rotatably mounted below the forward end portion of the guide cylinder 19, said cap strip being extended upwardly from said roll through the slots 25 of the guide cylinder. As shown, the rolled cap strip is rotatably supported on a spindle 38 slidably mounted in one of the side plates 7 and projecting into a socket 39 of a bearing plate 40 attached to the inner face of the other side plate 7. A compression spring 41 acts to project the spindle 38 to engage its end in the socket 39. The outer end of spindle 38 is provided with a handle 42 to facilitate retraction of the spindle against the action of spring 41 so that a new roll of caps may be placed in the gun when desired. A spacing block 43 is attached to the inner face of the side plate 7 which is remote from the bearing plate 40, thereby preventing undue lateral shifting of the roll of caps 37, as well as partially housing the spring 41. Hammer actuated means is provided for intermittently feeding the cap strip upwardly from the roll 37, the feeding movement being imparted to the strip 17 when the hammer is retracted to cocked position. This means includes an idler roller 44 and a co-acting feed roller 45 journalled between the plates 7 on a plane between the forward end of the guide cylinder 19 and the roll 37, and upwardly between which the cap strip 17 is passed. The rollers 44 and 45 have ribbed or roughened peripheries so as to insure efficient strip feeding action thereof, the roller 45 being secured upon a transverse shaft 46 journalled in one of the plates 7 and having an outwardly projecting end equipped with a handle 47 so that the roller 45 may be manually turned to initially feed the strip 17 upwardly through the guide cylinder 19. As shown in Figure 9, the shaft 46 is tubular and has a shaft 48 received in the inner end portion thereof, the other end portion of the shaft 48 being received in a further tubular shaft 49 journaled in the other plate 7 in axial alignment with the shaft 46. Shaft 48 thus maintains this axial alignment of the shafts 46 and 49 while permitting independent rotation of the latter. Secured on the shaft 49 is an actuating lever 50 and disposed on the adjacent ends of the shafts 46 and 49 between the roller 45 and the lever 50 is a helical spring 51 affording a ratchet driving connection between the lever 50 and the roller 45.

It will be noted in Figure 10 that the ends of the spring 51 are pointed or sharpened as at 52 so as to bite into the sides of the lever 50 and roller 45 when lever 50 is moved to turn shaft 49 in an anti-clockwise direction as viewed in Figures 3 and 5. The arrangement is such that when the lever 50 is swung to the left of Figure 3, the adjacent end of spring 51 bites into said lever and is thereby caused to turn. This has an expanding action on the spring 51 which causes the other end of spring 51 to bite into the side of the roller 45 and thereby cause the latter to turn with the shaft 49. In this way, each time the lever 50 is swung to the left of Figure 3 the strip 17 is fed upwardly from the roll 37 the proper distance to position a new cap directly behind the anvil 23. Conversely, when the lever 50 is swung to the right of Figure 3, or forwardly, it turns freely relative to spring 51 by causing a tightening of the coils of the latter and sliding past the adjacent end of the spring without turning the latter. At this time, the roller 45 remains still so as to have no feeding action on the strip 17 such as would cause downward movement of the latter. Lever 50 is connected with handle rod 28 by a link 53 so that the feeding movement of the cap strip 17 is automatically effected each time the hammer is retracted to cocked position. Specifically, rearward movement of the hammer causes rearward movement of link 53 and rearward swinging movement of lever 50 so that roller 45 is rotated in a counterclockwise direction as viewed in Figure 3. The roller 44 is carried by a shaft 54 mounted in the side plates 7, and a cover plate 55 is removably secured over the outer ends of the shafts 49 and 54 to retain them in place.

In operation, the spindle 38 is manually retracted against the action of spring 41, and the roll of caps is inserted upwardly between the plates 7 so that the spindle 38 will be projected through the center thereof by the spring 41 when said spindle 38 is released. The roll of caps is thus rotatably supported in proper position, and the end of the cap strip is passed upwardly between the rollers 44 and 45. By turning the shaft 46 through the medium of the handle 47, the cap strip is then fed upwardly through the slots 25 of the guide cylinder 19 so that a cap is located behind the anvil 23 in position to be struck by the hammer 20. The hammer 20 will of course, be retracted to cocked position before this is done, and when the lower end of trigger 31 is pressed rearwardly the sear 29 is lowered out of the path of the handle rod 28, thereby allowing spring 24 to forcibly project the hammer 20 so that the latter will strike and fire the operatively positioned cap of the strip 17. Upon projection of the hammer 20, the lever 50 is swung forwardly without turning the roller 45. The handle rod 28 is then grasped and moved rearwardly so as to retract the plunger until the handle rod 28 is positioned rearwardly of sear 29. At this time, spring 30 elevates the sear 29 into the path of the handle rod 28 and retains the hammer in cocked position. This cycle of operation is repeated each time a

cap is to be fired, a new cap being brought into firing position each time the hammer is retracted to cocked position by means of the ratchet driving connection between lever 50 and feed roller 45. When the roll of caps has been used, a new roll of caps can be readily inserted upon retraction of the spindle 38. It will thus be seen that the only manual operations required in firing the gun are the manual cocking of the hammer and the manual actuation of the trigger to permit projection of the hammer. The cap strip feeding operation is automatic or incident to the cocking of the hammer, and the retention of the hammer in cocked position is automatic or incident to retraction of the hammer to cocked position.

From the foregoing description, it will be seen that the invention provides a construction for effectively carrying out the stated objects of the invention. Changes in details of construction and modifications may be made within the spirit of the invention as claimed.

What I claim is:

1. In a toy cap gun, a spring projected sliding hammer having a lateral handle for retracting the same to cocked position, a guide cylinder for said hammer, an anvil mounted in one end of the guide cylinder, said guide cylinder being slotted for the upward passage of a cap strip therethrough directly behind the anvil, a vertically sliding sear engageable with the hammer handle to releasably retain the hammer in cocked position, a spring for elevating the sear into the path of the hammer handle, and a trigger for lowering the sear and permitting projection of the hammer for firing a cap positioned at the back of the anvil.

2. In a toy cap gun, a spring projected sliding hammer having a lateral handle for retracting the same to cocked position, a guide cylinder for said hammer, an anvil mounted in one end of the guide cylinder, said guide cylinder being slotted for the upward passage of a cap strip therethrough directly behind the anvil, a vertically sliding sear engageable with the hammer handle to releasably retain the hammer in cocked position, a spring for elevating the sear into the path of the hammer handle, and a trigger for lowering the sear and permitting projection of the hammer for firing a cap positioned at the back of the anvil, cap strip feeding means, an actuating lever for said feeding means, a ratchet driving connection between said lever and said feeding means, and an operative connection between said lever and the hammer handle effective to feed the cap strip a sufficient distance to bring a new cap into position behind the anvil each time the hammer is cocked.

3. In a toy cap gun, a spring projected sliding hammer having a lateral handle for retracting the same to cocked position, a guide cylinder for said hammer, an anvil mounted in one end of the guide cylinder, said guide cylinder being slotted for the upward passage of a cap strip therethrough directly behind the anvil, a vertically sliding sear engageable with the hammer handle to releasably retain the hammer in cocked position, a spring for elevating the sear into the path of the hammer handle, and a trigger for lowering the sear and permitting projection of the hammer for firing a cap positioned at the back of the anvil, said sear having a forwardly projecting and inclined extension on its upper

end projecting forwardly beyond the forward limit of movement of the hammer handle, said hammer handle being arranged to ride on said extension for automatically depressing the sear when the hammer is retracted to cocked position.

4. A toy cap gun comprising a stock having a tang extension on its forward end, side plates secured on opposite sides of said tang extension and projecting above and below and forwardly of the latter, a spacer block secured between the forward ends of said side plates, a barrel member having its forward end secured between the forward ends of the side plates and upon said spacing block, a cover plate secured upon and spanning the space between said side plates, a guide cylinder disposed longitudinally of and within the space between said tang extension and said cover plate and anchored to the tang extension, a spring projected sliding hammer arranged in said guide cylinder and having a laterally projecting handle for retracting the same to cocked position, said guide cylinder and one of said side plates having longitudinal elongated slots through which the hammer handle projects, a spring elevated vertically sliding sear mounted in and extending through said tang extension, said hammer handle being engageable behind the upper end of said sear when the latter is in elevated position for releasably retaining the hammer in cocked position, and a trigger operatively connected to the sear for lowering the latter out of the path of the hammer handle and permitting projection of the hammer.

5. A toy cap gun comprising a stock having a tang extension on its forward end, side plates secured on opposite sides of said tang extension and projecting above and below and forwardly of the latter, a spacer block secured between the forward ends of said side plates, a barrel member having its forward end secured between the forward ends of the side plates and upon said spacing block, a cover plate secured upon and spanning the space between said side plates, a guide cylinder disposed longitudinally of and within the space between said tang extension and said cover plate and anchored to toe tang extension, a spring projected sliding hammer arranged in said guide cylinder and having a laterally projecting handle for retracting the same to cocked position, said guide cylinder and one of said side plates having longitudinal elongated slots through which the hammer handle projects, a spring elevated vertically sliding sear mounted in and extending through said tang extension, said hammer handle being engageable behind the upper end of said sear when the latter is in elevated position for releasably retaining the hammer in cocked position, and a trigger operatively connected to the sear for lowering the latter out of the path of the hammer handle and permitting projection of the hammer, an anvil secured in the forward end of said guide cylinder, said guide cylinder being slotted for the upward passage of a cap strip therethrough directly behind the anvil, and means operatively connected to the hammer for automatically feeding a cap strip upwardly each time the hammer is retracted to cocked position for presenting a new cap behind the anvil in position to be struck by the hammer when the latter is projected.

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