United States Patent

[11] 3,604,136

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[21] Appl. No. **758,654**
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[45] Patented **Sept. 14, 1971**

[54] **SHOTGUN COUNTERBALANCE**
1 Claim, 10 Drawing Figs.

[52] **U.S. Cl.** ..... **42/1 R**
[51] **Int. Cl.** **F41c 27/00**
[50] **Field of Search** ..... 42/1; 1/1 N

[56] **References Cited**

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ABSTRACT: A counterbalance for use in shotguns of all types mountable within a compartment below the barrel and having a threaded shaft and at least one weight engaged upon said shaft for selected disposition axially thereof so as to compensate for any imbalance.

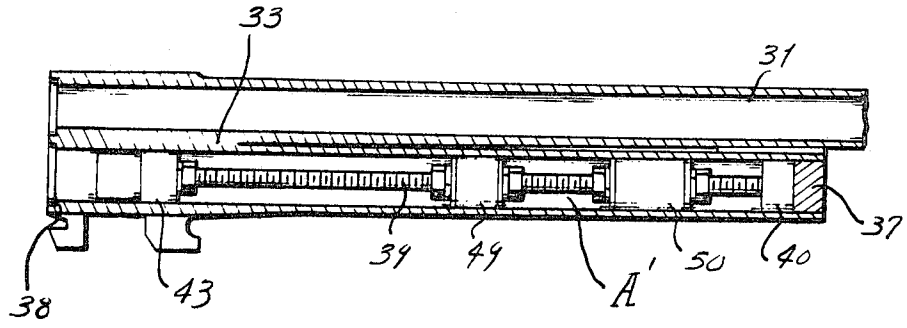

FIG. 1

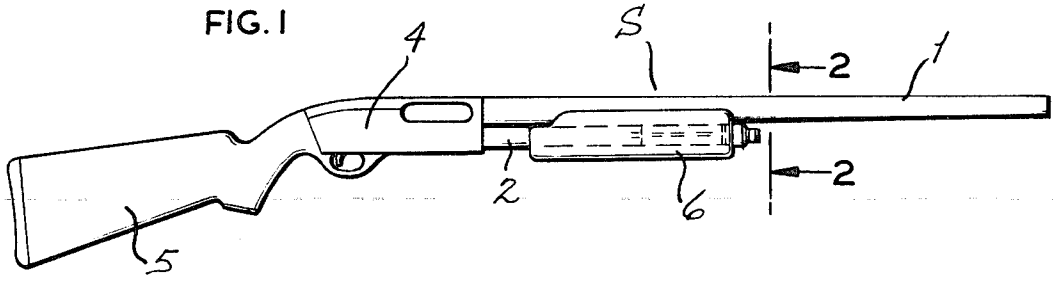

FIG. 2

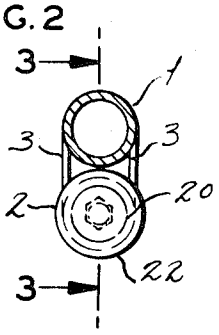

FIG. 3

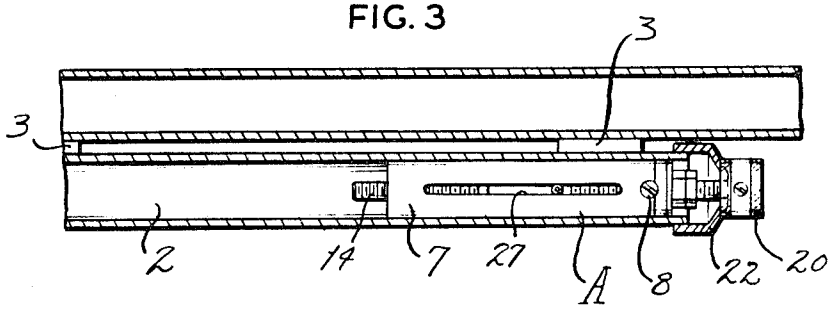

FIG. 4

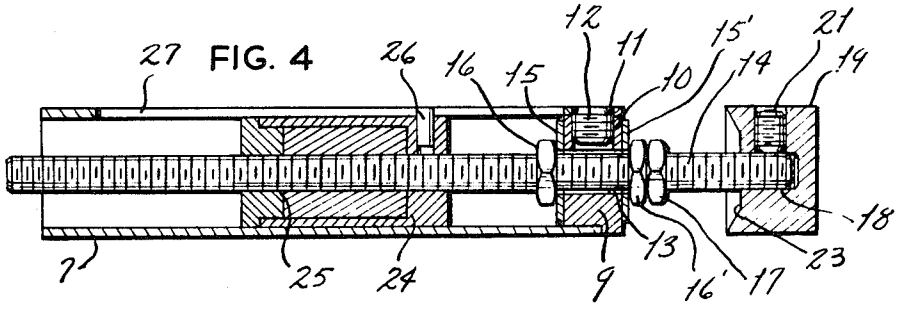

FIG. 5

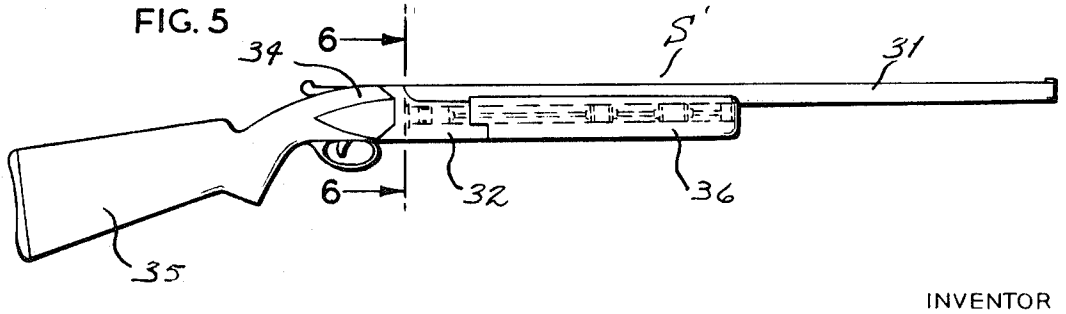

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FIG. 6

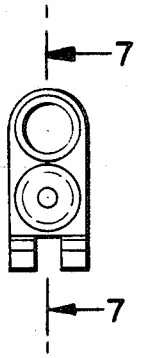


FIG. 7

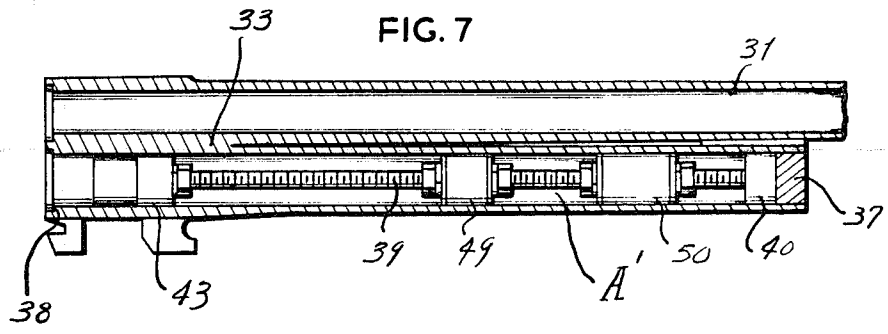


FIG. 8

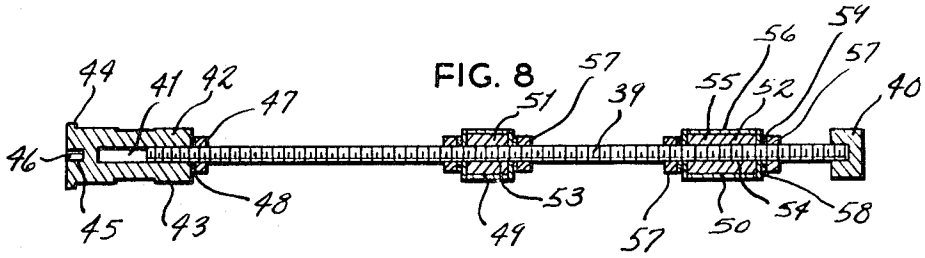


FIG. 9

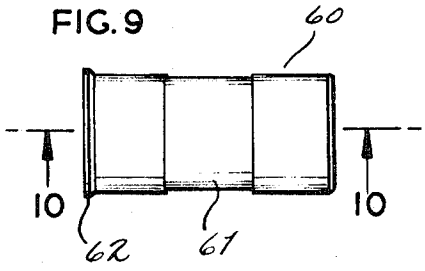
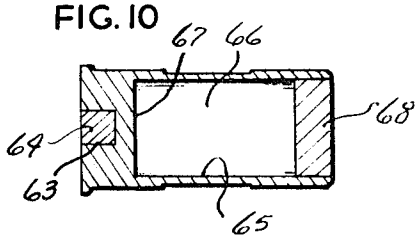


FIG. 10



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SHOTGUN COUNTERBALANCE

BACKGROUND AND SUMMARY OF THE INVENTION

It is an object of the present invention to provide a counterbalance for shotguns for disposition forwardly of the receiver for the purpose of compensating for any inherent imbalances within the shotgun by reason of the distribution of weights of the gun components.

It is another object of the present invention to provide a counterbalance of the type stated which permits of an interchange of gun barrels of varying gauge so as to allow for constant gun balance regardless of weight differentials of the barrels.

It is a still further object of the present invention to provide a counterbalance of the type stated which may be easily manipulated for bringing about the requisite adjustment, without necessitating the utilization of extrinsic tools whereby appropriate adjustments can be quickly effected on the spot.

It is another object of the present invention to provide a counterbalance of the type stated which is extremely versatile in being amenable to effective usage within shotguns of all types.

It is a still further object of the present invention to provide a counterbalance of the type stated the utilization of which will substantially eliminate barrel whipping, barrel bouncing and vibration which normally results in barrel bending or so-called "barrel walk".

It is another object of the present invention to provide a counterbalance of the type stated the use of which will conduce to a reliable shot pattern, obviating the erratic results obtained by unbalanced shotguns.

It is a still further object of the present invention to provide a counterbalance of the type stated which will assure the user of a consistent sense of "feel" with respect to the gun so that efforts in firing to compensate for any biases of the gun will be avoided.

It is another object of the present invention to provide a counterbalance of the type stated which embodies means for absorbing the impact of the firing pin so as to avoid accidental damage thereto.

It is a further object of the present invention to provide an end cap, which may be usable with the counterbalance of the present invention, designed to retain a quantity of a moisture absorbing agent so as to maintain the shell magazine in a relatively dry state, thereby impeding any damage through corrosion.

It is another object of the present invention to provide a counterbalance of the type stated which may be most economically manufactured; which may be readily installed within existing shotguns without necessitating costly modification thereof, which is easily adjusted by the average user, not requiring any developed skill; and which is reliable and durable in usage.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of the shotgun incorporating a counterbalance constructed in accordance with and embodying the present invention.

FIG. 2 is a vertical transverse sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is a vertical transverse sectional view taken on the line 3—3 of FIG. 2, but showing the counterbalance in full lines.

FIG. 4 is an enlarged, longitudinal sectional view of the counterbalance.

FIG. 5 is a side view of a shotgun incorporating another embodiment of a counterbalance constructed in accordance with and embodying the present invention.

FIG. 6 is a vertical sectional view taken on the line 6—6 of FIG. 5.

FIG. 7 is a vertical transverse sectional view taken on the line 7—7 of FIG. 6 that showing the counterbalance in full line.

FIG. 8 is a longitudinal sectional view of the counterbalance shown in FIG. 7.

FIG. 9 illustrates another form of the cap of the counterbalance shown in FIG. 7.

FIG. 10 is a longitudinal transverse sectional view taken on the line 10—10 of FIG. 9.

DESCRIPTION OF THE PRACTICAL EMBODIMENTS

Referring now by reference characters to the drawings which illustrate practical embodiments of the present invention, S generally designates a shotgun, as of the conventional repeating pump or autoloading type having a barrel 1, the customary shell magazine 2 located therebeneath and suitably secured, as by spaced apart struts 3; a receiver 4 attached to said barrel 1 and shell magazine 2, and a stock 5. Disposed enclosingly about the forward portion of shell magazine 2 is a for end 6.

Provided for reception within shell magazine 2 at its forward, or stock-remote end, is a counterbalance, designated generally A, which comprises a sleeve 7 of annular cross section fixed to the said wall of magazine 2, as by a screw 8, so as to inhibit relative movement. Said sleeve 7 at its rearward end is open and at its forward end is snugly closed by an interfitting plug 9; said latter having a radially extending tapped socket 10 for alignment with an aperture 11 in the wall of sleeve 7 for engagement with a retaining screw 12 for fixedly securing plug 9 within said sleeve 7. Plug 9 contains a bore 13 coaxial with sleeve 7, being smooth-surfaced for extension therethrough of an elongated threaded shaft 14 extending through sleeve 7 and being of such length as to normally extend beyond the open rearward end thereof and forwardly beyond plug 9.

Disposed against the opposite end faces of plug 9 are metallic washers 15,15' against which abut lock nuts 16,16', respectively; said latter being tightly engaged upon shaft 14. If desired an additional lock nut 17 may be presented adjacent lock nut 16'. It will thus be seen that bore 13 of plug 9 constitutes a bearing for shaft 14, permitting rotation thereof for purposes presently appearing.

The forward end of shaft 14 is secured within a threaded recess 18 formed in a control know 19 having a, preferably, knurled surface as at 20 for facilitating manipulation. Knob 19 is maintained upon shaft 14 by means of a screw 21.

Knob 19 is presented for ease of operation immediately forwardly of shell magazine 2; there being a cap or housing 22 closing the forward end of shell magazine 2 and receiving the forward portion of shaft 14; said housing 22 being tapered at its forward end for acceptance within a tapered recess 23 formed on the rearward face of knob 19.

Engaged upon shaft 14, within sleeve 7, is a counterweight 24 which may be of unitary construction or constituted of a multiplicity of interengaged components for development of a preselected weight. Said counterweight is axially bored and tapped as at 25 for securement upon shaft 14. Rigid at its inner end within counterweight 24 and extending radially outwardly therefrom is a pin 26 for extension through a slotlike aperture 27 formed in the wall of sleeve 7. In use, shaft 14 may be rotated by suitable turning of knob 19 which rotation will effect relative linear travel of counterweight 24 within sleeve 7 by reason of the interengagement of pin 26 within aperture 27 which inhibits rotative movement of said counterweight 24. Accordingly, counterweight 24 may be relatively, selectedly located within sleeve 7 so as to provide the requisite counterbalancing effect.

It is to be observed that the particular disposition of counterweight 24 will be determined with respect to the particular barrel being used as well as the nature of the stock so as to bring about as near a perfect balance as possible for substantial elimination of barrel bounce and whipping and of undesired vibration. By use of the present invention the heretofore accepted conditions of barrel lightness and barrel heaviness may be properly compensated. It is apparent that counterbalance A is adjusted with maximum facility, without requiring dismantling or disassembly of any of the related por-

tions of shotgun S so that suitable adjustment may be quickly made as required by change of barrels.

Referring now to FIGS. 5 to 8, inclusive, S' designates a single-barrel shotgun of the so-called over-under character comprising a barrel 31 and a lower tube indicated 32 being of relatively less length than barrel 31 and integral at its rearward end therewith throughout a zone indicated 33; there being a receiver 34 and stock 35. Lower tube 32 is adapted for mounting of a for end 36 (FIG. 5). Said lower tube may be, customarily, a segmented or shortened barrel being closed at its forward end, as by plug 37, and with its rearward end being open and having an annular shoulder 38 for purposes presently appearing. Provided for disposition within said lower tube 32 is a counterbalance, indicated generally A', and which embodies an elongated screw shaft 39 presented coaxially of lower tube 32 and having engaged on its forward end a bumper 40 for abutment on its forward end face against plug 37. The opposite or rearward end of shaft 39 is threadedly received within a tapped axial bore 41 formed in the body 42 of an end cap member 43 having a configuration similar to a shotgun cartridge shell and a peripheral end rim 44 for seated disposition within shoulder 38 whereby between such engagement and the abutment of bumper 40 against plug 37 counterbalance A' is rendered stable within lower tube 32 against axial movement. Into the rearwardly presented face of end cap 43 there opens the rearward end of a relatively short recess 45 for fittedly receiving a durable yet relatively flexible or resilient plug 46, as of nylon or the like; said plug being presented for contact by the firing pin of shotgun S' and to thereby provide sufficient yieldability so as to prevent damage to the firing pin. It is apparent that end cap 43 may be fabricated of any suitable material although metallics have been found preferable. In order to inhibit unauthorized or premature unthreading action between shaft 39 and cap 43 there is provided a lock nut 47 engaged on said shaft 39 for abutment against a washer 48 disposed between same and end cap 43. It will accordingly be seen, as best shown in FIG. 8, that axial bore 41 is of such length so as to permit of a desired range of relative movement between shaft 39 and said end cap 43 for accommodating the particular longitudinal extent of the related lower tube 32.

Threadedly engaged upon shaft 39 between bumper 40 and end cap 43 are counterweights 49,50 which comprehend body portions 51,52, respectively, each having a tapped axial bore 53,54 respectively for engagement, as aforesaid, upon shaft 39. Said counterweights 49,50, may be, if desired, of unitary construction or may, as indicated in FIG. 8, incorporate an inner body portion, as shown at 55, with an exterior sheathing or plating, as at 56. Counterweights 49,50 are shown in the drawings as being of different size and hence of different weight but it is to be understood that the weight relationship therebetween is a matter of choice dependent upon the intended usage. However, by presenting counterweights 49,50 of different weights a finer adjustment may be more readily achieved. It is, of course, to be further understood that any number of such weights may be mounted upon shaft 39 although it has been found in practice that two such weights serve most satisfactorily Engaged upon shaft 39 at opposite ends of each weight 49,50 are locknuts 57 for tight threading against companion washers 58,59 disposed at each end of each weight 49,50 so that by operation of locknuts 57 the said weights may be securely maintained in selected positions.

In usage it is apparent that counterbalance A' must be adjusted exteriorly of its associated shotgun S' so that after manipulation of counterweights 49,50 has been effected, counterbalance A' is then inserted within lower tube 32, with its state of adjustment being determined, as it were, by "feel". Withdrawal of counterbalance A' is easily accomplished so as to permit of any further adjustments of either or both weights 49,50, as may be required. As described above and as seen in FIG. 7, counterbalance A', when in operative condition, is stable against accidental dislodgment with attendant loss of adjustment, whereby once said counterbalance is installed the user may fire the shotgun with full sense of confidence and assurance. The close fitting relationship between counterbalance A' and its receiving compartment, lower tube 32, prevents end play as well as noise, rattle, and barrel motion. It will be observed that the presence of end cap 43 at the rearward end of lower tube 32 will prevent the accidental insertion of a loaded shell within said barrel 32 thereby avoiding a potential hazard.

Referring now to FIGS. 9 and 10, 60 designates an end cap having a generally cylindrical body 61 broadly simulative of the exterior contour of a shotgun cartridge and being provided at its normally rearward end with a rim 62 for detaining disposition against the shoulder of the receiving barrel. Centrally of its rearward face end cap 60 is provided with a socket 63 for snugly receiving a plug 64, as of nylon rubber and the like, for yieldably accepting the impact of the firing pin and thereby preventing damage of the same.

Progressing from its opposite or forward end, end cap 60 is longitudinally bored, as at 65, for development of a relatively enlarged chamber 66, the rearward end of which is defined by the base of said bore 67 and the forward end of which is determined by a closure plug 68 fabricated of moisture permeative material and fitted within the forward end. Said chamber is designed to receive a quantity of a hygroscopic composition, such as silica gel or other like compounds, for absorbing ambient moisture thereby retaining the magazine in a relatively dry state so that damage to the shotgun, as through corrosion will be prevented pending cleaning operations. It is thus apparent that end cap 60 might be considered as a desiccating cartridge which may be used independently for disposition within shotgun magazines. It is indeed evident that end cap 60 may quite easily be adapted for replacement of end cap 43 of counterbalance A' by the mere expedient of extending closure plug 68 and providing same with an internally threaded bore.

From the foregoing it will be seen that the present invention conduces to the proper balancing of shotguns so that in firing, barrel whip, muzzle jumping, barrel bouncing and vibration are substantially eliminated. It is to be recognized that in the manufacture of shotguns a consistency of weight from gun to gun cannot be achieved as a result of variations in the weights of components such as iron, wood and the like. Additionally in firearms which are adapted for interchange of the gun barrel the center of gravity will expectedly shift with each barrel replacement. Thus counterbalances A and A' constitute reliable means for bringing about the desired degree of balance, offsetting the customarily accepted variations so that the sportsman will experience a constant sense of appropriate balance resulting in consistency of speed of swing, as in trap shooting, and with resultant reliability in high level of shot pattern.

Having thus described my invention what I claim and desire to obtain by Letters Patent is:

1. The combination of a shotgun having a barrel, a receiver attached to said barrel, a stock attached to said receiver, means defining a chamber beneath said barrel extending from a point adjacent said receiver to a point spaced from the outer extremity of said barrel, and of a counterbalance comprising:
   a. a threaded shaft disposed axially within said chamber;
   b. a plug provided in said chamber at the end remote from said receiver, the adjacent end of said shaft being secured to said plug;
   c. an end cap member provided in said chamber at the end proximate said receiver;
      1. Said end cap member having a peripheral rim adjacent said receiver;
      2. Said chamber having a groove for receiving said end cap rim for restraining said end cap member against movement within said chamber away from said receiver;
      3. Said end cap member having an axially threaded bore;
      4. Said shaft being threadedly received within said bore to a preselected point for securing said shaft to said end cap member at its end proximate said receiver;

d. At least two weight bodies threadedly engaged on said shaft for selective relative positioning therealong; said weight bodies being optionally of different size and weights;

e. And means for maintaining said weights in relative selected disposition on said shaft.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,604,136 Dated Sept. 14, 1971

Inventor(s) Jesse B. Edwards

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the Patent Heading:

Change "Madison, Illinois 62060" to
---Alton, Illinois 62002---.

Signed and sealed this 11th day of April 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents