Claims:

1. A firearm comprising:

a bolt having a plurality of locking lugs, the locking lugs being configured to have a shear area that is at least approximately 1.3 times that of a standard M16/M4;

a piston formed on the bolt and having a plurality of rings configured to cooperate with the piston to mitigate gas leakage past the piston, each of the rings having a key formed thereon and a gap formed therein such that the gap of one ring is configured to receive at least a portion of the key of another ring;

a bolt carrier to which the bolt is movably attached, the bolt carrier having a double cut cam, the double cut cam having a starting point in an unlocked position of the bolt that is substantially the same as the standard M16 cam and having an unlocking cam surface that has sufficient dwell increase to delay a start of unlocking when the bolt carrier is used in an M16/M4 rifle or carbine;

a weight movably disposed within the bolt carrier, the weight being configured to inhibit rearward and forward bouncing of the bolt carrier;

a carrier key attached to the bolt carrier and configured to facilitate a stroke of the bolt carrier that is approximately 0.360 inch longer than that of the standard M16/M4;

a buffer having a length that is approximately 0.360 inch shorter than a standard buffer for the M16 /M4 buffer;

a tube configured to provide gas from a barrel of the firearm to the piston via the carrier key, the tube having a heat radiator formed on at least a portion of the tube;

a gas metering plug having a gas metering hole configured to meter gas from the barrel of a firearm to the bolt carrier of the firearm, wherein the gas metering hole is located away from a gas port of the firearm; and

a front sight block having a rear band and a front band for attaching the sight block to the barrel and having a gas passage formed in the front band for facilitating gas flow from the barrel to a gas tube of the firearm.

2. A bolt group comprising:

a bolt having a plurality of locking lugs, the locking lugs being configured to have a shear area that is at least approximately 1.3 times that of a standard M16/M4;

a piston formed on the bolt and having a plurality of rings configured to cooperate with the piston to mitigate gas leakage past the piston, each of the rings having a key formed thereon and a gap formed therein such that the gap of one ring is configured to receive at least a portion of the key of another ring;

a bolt carrier to which the bolt is movably attached, the bolt carrier having a double cut cam, the double cut cam having a starting point in an unlocked position of the bolt that is substantially the same as the standard M16 cam and having an unlocking cam surface that has sufficient dwell increase to delay a start of unlocking when the bolt carrier is used in an M16 rifle or an M4 carbine;

a weight movably disposed within the bolt carrier, the weight being configured to inhibit rearward and forward bouncing of the bolt carrier; and

a carrier key attached to the bolt carrier and configured to facilitate a stroke of the bolt carrier that is approximately 0.360 inch longer than that of the standard M16/M4.

3. A device comprising:

a ring configured to cooperate with a piston of a gas operated firearm to mitigate gas leakage past the piston;

a key formed upon the ring; and

a gap formed in the ring and configured to receive at least a portion of a key of another ring.

4. The device as recited in Claim 3, wherein the key is substantially opposite the gap on the ring.

5. The device as recited in Claim 3, wherein the key and the gap are formed such that a pair of the rings is nestable with the key of each of the rings disposed within the gap of each other of the rings.

6. The device as recited in Claim 3, wherein the key is substantially rectangular in cross-section.

7. The device as recited in Claim 3, wherein the gap is substantially rectangular in cross-section.

8. The device as recited in Claim 3, wherein the walls of the ring are substantially rectangular in cross-section.

9. The device as recited in Claim 3, wherein the ring is formed of stainless steel.

10. The device as recited in Claim 3, wherein the ring is configured to be received at least partially within a groove of the piston.

11. The device as recited in Claim 3, wherein the device is a firearm.

12. A device comprising:

a piston for a gas operated firearm;

a first ring configured to be received on the piston;

a second ring configured to be received on the piston; and

wherein the first ring and second ring are configured to interlock with one another such that the first ring and second ring rotate substantially in unison about the piston.

13. A method comprising:

placing one ring having a key and a gap on a piston of a gas operated firearm;

placing another ring having a key and a gap on the piston; and

wherein the key of each one of the rings is disposed at least partially within the gap of each of the other rings.

14. A method comprising:

mitigating gas leakage past a piston of a firearm using a plurality of rings, each one of the rings having a key formed thereon and a gap formed therein; and

wherein the gap of one of the rings receives at least a portion of the key of another of the rings.

15. A device comprising:

a tube configured to provide gas from a barrel of a firearm to a piston of the firearm; and

a heat radiator extending from at least a portion of the tube.

16. The device as recited in Claim 15, wherein the heat radiator comprises fins that form a V-notch with approximately 60 degrees between opposing walls.

17. The device as recited in Claim 15, wherein the heat radiator comprises threads.

18. The device as recited in Claim 17, wherein the threads are a uniform standard thread form.

19. The device as recited in Claim 17, wherein the threads comprises helical threads.

20. The device as recited in Claim 15, wherein the tube has an outer diameter of 0.250 inch.

21. The device as recited in Claim 15, wherein the tube is formed of 347 stainless steel.

22. The device as recited in Claim 15, wherein the tube is configured for use on a firearm having a piston formed on a bolt of the firearm.

23. The device as recited in Claim 15, wherein the tube is configured for use on a member of an M16/M4 family of firearms.

24. The device as recited in Claim 15, wherein the tube is configured to receive gas from a barrel of a firearm that is a member of an M16/M4 family of firearms via a front sight of the firearm and to provide the gas to a bolt carrier of the firearm via a bolt carrier key, the tube having an outside interfacing diameter to the bolt carrier key of less than 0.1792 inches, the tube having a length from a front sight mounting hole thereof to a rear end thereof of less than 9.57 inches for an M4 type of firearm, and the tube having a length from a front sight mounting hole thereof to a rear end thereof of less than 14.95 inches for an M16 type of firearm.

25. The device as recited in Claim 15, wherein the device is a firearm.

26. A method comprising:

cutting a tube;

forming a radiator on the tube; and

installing the tube on a firearm such that the tube is configured to provide gas from a barrel of the firearm to a piston thereof.

27. The method as recited in Claim 26, further comprising:

forming a first bend in the tube; and

forming a second bend in the tube.

28. The method as recited in Claim 26, wherein the heat radiator comprises threads.

29. The method as recited in Claim 28, wherein the threads are uniform standard thread form.

30. The method as recited in Claim 28, wherein the threads are formed on a portion of the tube away from ends of the tube.

31. The method as recited in Claim 28, wherein the threads are not formed on ends of the tube.

32. The method as recited in Claim 28, wherein the tube has an outer diameter of 0.250 inch.

33. The method as recited in Claim 26, wherein the tube is formed of 347 stainless steel.

34. A device comprising a tube configured to receive gas from a barrel of a firearm that is a member of an M16/M4 family of firearms via a front sight of the firearm and to provide the gas to a bolt carrier of the firearm via a bolt carrier key, the tube having an outside interfacing diameter to the bolt carrier key of less than 0.1792 inches.

35. A device comprising a tube configured to receive gas from a barrel of a firearm that is a member of an M4 family of firearms via a front sight of the firearm and to provide the gas to a bolt carrier of the firearm via a bolt carrier key, the tube having a length from a front sight mounting hole thereof to a rear end thereof of less than 9.57 inches.

36. A device comprising a tube configured to receive gas from a barrel of a firearm that is a member of an M16 family of firearms via a front sight of the firearm and to provide the gas to a bolt carrier of the firearm via a bolt carrier key, the tube having a length from a front sight mounting hole thereof to a rear end thereof of less than 14.95 inches.

37. A method comprising:

providing gas from a barrel of a firearm to a piston of the firearm; and

wherein a heat radiator extends from at least a portion of the tube.

38. A device comprising:

a gas metering hole configured to meter gas from a barrel of a firearm to a bolt carrier of the firearm; and

wherein the gas metering hole is located away from a gas port of the firearm.

39. The device as recited in Claim 38, wherein the gas metering hole is located sufficiently away from the gas port of the firearm so as to be substantially unaffected by erosion.

40. The device as recited in Claim 38, wherein the gas metering hole is located sufficiently away from the gas port of the firearm so as to be substantially unaffected by erosion caused by scrubbing of passing bullets and/or bombardment of propellant grains.

41. The device as recited in Claim 38, wherein the gas metering hole is configured such that gas passes therethrough prior to entering a gas tube of the firearm.

42. The device as recited in Claim 38, wherein the gas metering hole is smaller than a gas port of the firearm.

43. The device as recited in Claim 38, wherein the gas metering hole is formed in a plug at a front of a gas tube.

44. The device as recited in Claim 38, wherein the gas metering hole is formed of a heat resistant material.

45. The device as recited in Claim 38, wherein the device is a firearm.

46. A method comprising:

placing a gas metering hole in a path of gas from a barrel of a firearm to a bolt carrier of the firearm;

wherein the gas metering hole is located away from a gas port of the firearm; and

wherein the gas metering hole is configured to meter gas.

47. A method comprising:

metering gas from a barrel of a firearm through a gas metering hole;

providing the gas to a bolt carrier of the firearm; and

wherein the gas metering hole is located away from a gas port of the firearm.

48. A device comprising:

a front sight block for a firearm;

a rear band and a front band for attaching the sight block to a barrel of the firearm; and

a gas passage formed in the front band for facilitating gas flow from the barrel to a gas tube of the firearm.

49. The device as recited in Claim 48, wherein the gas passage is configured to substantially align with a gas port of the barrel and to receive gas from the gas port.

50. The device as recited in Claim 48, further comprising a gas metering plug configured to be received within the front sight block and configured to meter gas from the gas port.

51. The device as recited in Claim 50, wherein the gas metering plug comprises a fixed orifice.

52. The device as recited in Claim 50, wherein the gas metering plug comprises a calibrated orifice.

53. The device as recited in Claim 48, further comprising a gas tube configured to mate with the front sight block.

54. The device as recited in Claim 53, further comprising a heat exchanger formed upon the gas tube.

55. The device as recited in Claim 53, further comprising threads formed upon the gas tube.

56. The device as recited in Claim 48, wherein the front sight block is configured for use with a member of the M16/M4 family of firearms.

57. The device as recited in Claim 48, wherein the device is a firearm.

58. A method comprising:

forming a gas passage in a front band of a front sight block;

forming a gas port in a barrel; and

attaching the front sight block to the barrel such that the gas passage is substantially aligned with respect to the gas port.

59. The method as recited in Claim 58, further comprising installing a gas metering plug in the front sight block.

60. The method as recited in Claim 58, further comprising installing a gas metering plug in the gas tube and installing the gas tube partially within the front sight block.

61. A method comprising:

communicating gas from a barrel of a firearm to a gas tube of the firearm; and

wherein the gas is communicated through a front band of a front sight block.

62. The method device as recited in Claim 61, further comprising metering gas through a gas metering plug.

63. A device comprising:

a bolt carrier;

a double cut cam formed in the bolt carrier; and

wherein the cam has a starting point in an unlocked position of the bolt that is substantially the same as the standard M16 cam and has an unlocking cam surface that has sufficient dwell increase to delay a start of unlocking when the bolt carrier is used in an M16 rifle or an M4 carbine.

64. The device as recited in Claim 63, wherein the device is a firearm.

65. A method comprising:

assembling a bolt carrier into a firearm;

wherein a double cut cam is formed in the bolt carrier; and

wherein the double cut cam has a starting point in an unlocked position of the bolt that is substantially the same as the standard M16 cam and has an unlocking cam surface that has sufficient dwell increase to delay a start of unlocking when the bolt carrier is used in an M16 rifle or an M4 carbine.

66. A method comprising:

moving a double cut cam with respect to a cam pin from an unlocked position of a bolt to a locked position of the bolt; and

wherein the double cut cam has a starting point in the unlocked position of the bolt that is substantially the same as the standard M16 cam and has an unlocking cam surface that has sufficient dwell increase to delay a start of unlocking when the bolt carrier is used in an M16 rifle or an M4 carbine.

67. A device comprising:

a bolt carrier;

a weight movably disposed within the bolt carrier; and

wherein the weight is configured to inhibit rearward and forward bouncing of the bolt carrier.

68. The device as recited in Claim 67, wherein the weight is configured to slide within the bolt carrier.

69. The device as recited in Claim 67, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a forwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

70. The device as recited in Claim 67, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a rearwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

71. The device as recited in Claim 67, wherein the weight is configured to impact an anvil after a bolt engages bolt lugs of a firearm so as to inhibit bouncing of the bolt carrier.

72. The device as recited in Claim 67, wherein the weight is configured to impact an anvil after a buffer of the bolt carrier contacts a rear wall of a receiver of a firearm so as to inhibit bouncing of the bolt carrier.

73. The device as recited in Claim 67, further comprising:

a cavity formed within the bolt carrier and within which the weight slides; and

at least one spring configured to generally center the weight within the cavity.

74. The device as recited in Claim 67, further comprising:

a cavity formed within the bolt carrier and within which the weight slides;

two springs configured to generally center the weight within the cavity; and

two plungers upon which the springs are disposed.

75. The device as recited in Claim 67, wherein the weight is generally cylindrical in shape.

76. The device as recited in Claim 67, further comprising:

a first cavity formed within the bolt carrier and within which the weight slides;

two springs configured to generally center the weight within the first cavity;

two plungers upon which the springs are disposed;

a second cavity and a third cavity formed within the weight, one spring and one plunger being disposed within each of the second cavity and the third cavity; and

wherein the second cavity and the third cavity have blocking shoulders that prevent the plunger disposed therein from moving beyond a centered position of the plunger so that when inertia moves the weight beyond a centered position of the weight one plunger compresses a spring to return the weight to center while the other plunger and spring are blocked from acting upon the weight.

77. The device as recited in Claim 76, further comprising an anvil configured to hold the weight, the springs, and the plungers within the bolt carrier.

78. The device as recited in Claim 77, wherein the weight is configured to impact against the anvil during forward and rearward travel of the weight.

79. The device as recited in Claim 77, further comprising a pin configured to hold the anvil at least partially within the bolt carrier.

80. The device as recited in Claim 67, wherein the bolt carrier is configured for use in a firearm selected from the group consisting of:

a member of an M16/M4 family of firearms;

a copy of a member of an M16/M4 family of firearms; and

any firearm in which the bolt carrier will function.

81. The device as recited in Claim 67, wherein the bolt carrier is modified to function in guns that are driven by an operating rod and piston.

82. The device as recited in Claim 67, wherein the device is a firearm.

83. A method comprising:

providing a bolt carrier;

movably disposing a weight within the bolt carrier; and

wherein the weight is configured to inhibit rearward and forward bouncing of the bolt carrier.

84. The method as recited in Claim 83, wherein the weight is configured to slide within the bolt carrier.

85. The method as recited in Claim 83, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a forwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

86. The method as recited in Claim 83, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a rearwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

87. The method as recited in Claim 83, wherein the weight is configured to impact an anvil after the bolt engages bolt lugs of a firearm so as to inhibit bouncing of the bolt carrier.

88. The method as recited in Claim 83, wherein the weight is configured to impact an anvil after a buffer of the bolt carrier contacts a rear wall of a receiver of a firearm so as to inhibit bouncing of the bolt carrier.

89. The method as recited in Claim 83, further comprising:

forming a cavity formed within the bolt carrier such that the weight is slidable with the cavity; and

centering the weight within the cavity using at least one spring.

90. The method as recited in Claim 83, further comprising:

forming a first cavity within the bolt carrier such that the weight is slidable with the first cavity;

centering the weight within the first cavity using two springs that are disposed upon two plungers; and

wherein the weight comprises a second cavity and the third cavity that each have one of the plungers and one of the springs disposed therein and that have blocking shoulders that prevent the plunger disposed therein from moving beyond a centered position of the plunger so that when inertia moves the weight beyond a centered position of the weight one plunger compresses a spring to return the weight to center while the other plunger and spring are blocked from acting upon the weight.

91. The method as recited in Claim 83, wherein the weight is generally cylindrical in shape.

92. The method as recited in Claim 83, further comprising:

forming a first cavity within the bolt carrier such that the weight is slidable with the first cavity;

forming a second cavity and a third cavity within the weight;

centering the weight within the first cavity using two springs that are disposed upon two plungers;

wherein one of the springs and one of the plungers are disposed within each of the second cavity and the third cavity; and

wherein the second cavity and the third cavity have blocking shoulders that prevent the plunger disposed therein from moving beyond a centered position of the plunger so that when inertia moves the weight beyond a centered position of the weight one plunger compresses a spring to return the weight to center while the other plunger and spring are blocked from acting upon the weight.

93. The method as recited in Claim 92, further comprising using an anvil to hold the weight, the springs, and the plungers within the bolt carrier.

94. The method as recited in Claim 93, wherein the weight is configured to impact against the anvil during forward and rearward travel of the weight.

95. The method as recited in Claim 93, further comprising using a pin to hold the anvil at least partially within the bolt carrier.

96. The method as recited in Claim 83, wherein the bolt carrier is configured for use in a member of an M16/M4 family of firearms.

97. A method comprising:

firing a firearm so as to cause a weight to move within a bolt carrier; and

wherein the weight is configured to inhibit rearward and forward bouncing of the bolt carrier.

98. The method as recited in Claim 97, wherein the weight is configured to slide within the bolt carrier.

99. The method as recited in Claim 97, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a forwardmost position of the bolt carrier so as to inhibit bouncing of the bolt.

100. The method as recited in Claim 97, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a rearwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

101. The method as recited in Claim 97, wherein the weight is configured to impact an anvil after the bolt engages bolt lugs of a firearm so as to inhibit bouncing of the bolt carrier.

102. The method as recited in Claim 97, wherein the weight is configured to impact an anvil after a buffer of the bolt carrier contacts a rear wall of a receiver of a firearm so as to inhibit bouncing of the bolt carrier.

103. The method as recited in Claim 97, wherein:
the weight slides within a cavity formed within the bolt carrier; and
at least one spring generally centers the weight within the cavity.

104. The method as recited in Claim 97, wherein:
the weight slides within a cavity formed within the bolt carrier;
two springs generally center the weight within the cavity;
the two springs are disposed within two cavities upon two plungers; and
wherein the two cavities have blocking shoulders that prevent the plunger disposed therein from moving beyond a centered position of the plunger so that when inertia moves the weight beyond a centered position of the weight one plunger compresses one spring to return the weight to center while the other plunger and the other spring are blocked from acting upon the weight.

105. The method as recited in Claim 97, wherein the weight is generally cylindrical in shape.

106. The method as recited in Claim 97, wherein:

the weight slides within a first cavity formed within the bolt carrier;

two springs generally center the weight within the first cavity;

the two springs are disposed upon two plungers;

one of the springs and one of the plungers are disposed within each of a second cavity and a third cavity formed in the weight; and

wherein the second cavity and the third cavity have blocking shoulders that prevent the plunger disposed therein from moving beyond a centered position of the plunger so that when inertia moves the weight beyond a centered position of the weight one plunger compresses a spring to return the weight to center while the other plunger and spring are blocked from acting upon the weight.

107. The method as recited in Claim 106, further comprising holding the weight, the springs, and the plungers within the bolt carrier using an anvil.

108. The method as recited in Claim 107, wherein the weight is configured to impact against the anvil during forward and rearward travel of the weight.

109. The method as recited in Claim 107, further comprising holding the anvil at least partially within the bolt carrier using a pin.

110. The method as recited in Claim 97, wherein the bolt carrier is configured for use in a member of an M16/M4 family of firearms.

111. A device comprising a bolt carrier having a weight disposed therein so as to inhibit both forward and rearward bouncing of the bolt carrier.

112. A method comprising sliding a weight within a bolt carrier so as to inhibit both forward and rearward bouncing of the bolt carrier.

113. A device comprising:

a bolt for an M16/M4 firearm, the bolt comprising:

a plurality of locking lugs formed upon the bolt;

a barrel extension;

a plurality of locking lugs formed upon the barrel extension;

wherein the locking lugs are configured to have a shear area that is at least approximately 1.3 times that of a standard M16/M4.

114. The device as recited in Claim 113, wherein the shear area is increased with respect to that of a standard M16/M4 by lengthening the locking lugs.

115. The device as recited in Claim 113, further comprising:

a flange formed upon the barrel extension such that the flange is approximately 0.130 inch from a forward end of the barrel extension;

a carrier key configured to facilitate a stroke of a bolt carrier within which the bolt is partially disposed, the carrier key being approximately 0.360 inch longer than that of a standard M16/M4; and

a buffer having a length that is approximately 0.360 inch shorter buffer than a standard buffer for the M16 /M4 buffer.

116. The device as recited in Claim 113, wherein the device is a firearm.

117. A bolt group comprising:

a bolt having a plurality of locking lugs; and

wherein the locking lugs are configured to have a shear area that is at least approximately 1.3 times that of a standard M16/M4.

118. The bolt group as recited in Claim 117, wherein the shear area is increased with respect to that of the standard M16/M4 by lengthening the locking lugs.

119. The bolt group as recited in Claim 117, further comprising:

a bolt catch; and

wherein an over travel of the bolt catch is approximately 0.355 inch so as to provide sufficient time for the bolt catch to engage in an event of increased fire rate.

120. The bolt group as recited in Claim 117, wherein a travel of the bolt is increased by 0.360 inch with respect to the travel of the standard M16/M4 to reduce a rate of fire of a firearm.

121. A method comprising:

assembling a bolt for an M16/M4 firearm into the firearm; and

wherein the bolt comprises a plurality of locking lugs configured to have a shear area that is at least approximately 1.3 times that of a standard M16/M4.

122. A method for operating a firearm, the method comprising:

engaging locking lugs of a bolt with complementary locking lugs of a barrel extension; and

wherein the locking lugs of the bolt and the locking lugs of the barrel extension are configured to have a shear area that is at least approximately 1.3 times that of the shear area of a standard M16/M4.

123. The method as recited in Claim 122, wherein the shear area is increased with respect to that of the standard M16/M4 by lengthening the locking lugs.

124. The method as recited in Claim 122, further comprising moving the bolt with an over travel of the bolt catch of approximately 0.355 inch so as to provide sufficient time for the bolt catch to engage in the event of increased gas pressure, firing rate, or bolt group travel speed.

125. The method as recited in Claim 122, further comprising moving the bolt with a travel that is increased by 0.360 inch with respect to the travel of the standard M16/M4 to reduce a rate of fire of a firearm.

126. The method as recited in Claim 122, further comprising feeding cartridges via two feed ramps that are longer and wider than feed ramps of the standard M16/M4.

127. The method as recited in Claim 122, unlocking the bolt after approximately the same delay and at approximately the same pressure drop as that of the standard M16 using a double cut cam.

128. A device comprising:

a carrier key configured to facilitate a stroke of the bolt carrier that is approximately 0.360 inch longer than that of a standard M16/M4; and

a buffer having a length that is approximately 0.360 inch shorter buffer than a standard buffer for the M16 /M4 buffer.

129. The device as recited in Claim 128, wherein the carrier key is configured to attach to a bolt carrier with only one fastener.

130. The device as recited in Claim 128, wherein the carrier key is configured to avoid interference with a portion of a lower receiver when the carrier and key are in a rearmost position.

131. The device as recited in Claim 128, wherein the device is a firearm.

132. A method comprising:

attaching a carrier key to a bolt carrier for an M16/M4 firearm, wherein the carrier key is configured to facilitate a stroke of the bolt carrier that is approximately 0.360 inch longer than that of a standard M16/M4; and

placing a buffer in the firearm, the buffer having a length that is approximately 0.360 inch shorter buffer than a standard buffer for the M16 /M4 buffer.

133. A method comprising:

cycling a bolt carrier for an M16/M4 firearm, wherein the carrier key is configured to facilitate a stroke of the bolt carrier that is approximately 0.360 inch longer than that of a standard M16/M4; and

wherein the bolt carrier abuts a buffer having a length that is approximately 0.360 inch shorter buffer than a standard buffer for the M16 /M4 buffer.

Claims:

1. A firearm comprising:

a bolt having a plurality of locking lugs;

a piston formed on the bolt and having a plurality of rings configured to cooperate with the piston to mitigate gas leakage past the piston, each of the rings having a key formed thereon and a gap formed completely therethrough such that the gap of one ring is configured to receive at least a portion of the key of another ring;

a bolt carrier to which the bolt is movably attached, the bolt carrier having a double cut cam;

a weight movably disposed within the bolt carrier, the weight being configured to inhibit rearward and forward bouncing of the bolt carrier;

first and second springs that centrally bias the weight;

a carrier key attached to the bolt;

a tube configured to provide gas from a barrel of the firearm to the piston via the carrier key, the tube having a heat radiator formed on at least a portion of the tube;

a gas metering plug having a gas metering hole configured to meter gas from the barrel of a firearm to the bolt carrier of the firearm, wherein the gas metering hole is located away from a gas port of the firearm; and

a front sight block having a rear band and a front band for attaching the sight block to the barrel and having a gas passage formed in the front band for facilitating gas flow from the barrel to a gas tube of the firearm.

2. A bolt group for a firearm comprising:

a bolt having a plurality of locking lugs;

a piston formed on the bolt and having a plurality of rings configured to cooperate with the piston to mitigate gas leakage past the piston, each of the rings having a key formed thereon and a gap formed completely therethrough such that the gap of one ring is configured to receive at least a portion of the key of another ring;

a bolt carrier to which the bolt is movably attached, the bolt carrier having a double cut cam;

a weight movably disposed within the bolt carrier, the weight being configured to inhibit rearward and forward bouncing of the bolt carrier;

first and second springs that centrally bias the weight; and

a carrier key attached to the bolt carrier.

3. A method comprising:

mitigating gas leakage past a piston of a firearm using a plurality of rings, each one of the rings having a key formed thereon and a gap formed therein;

wherein the gap of one of the rings is formed completely therethrough and receives at least a portion of the key of another of the rings; and

inhibiting rearward and forward bouncing of a bolt carrier with a weight that is movably disposed within the bolt carrier and first and second springs that centrally bias the weight.

4. A firearm comprising:

a barrel;

a gas port formed in the barrel;

a gas tube;

a bolt carrier;

a weight movably disposed within the bolt carrier, the weight being configured to inhibit rearward and forward bouncing of the bolt carrier;

first and second springs that centrally bias the weight;

a front sight block having a rear band and a front band for attaching the sight block to the barrel and having a gas passage for facilitating gas flow from the barrel to the gas tube; and

a gas metering plug having a gas metering hole configured to meter gas from the barrel the bolt carrier, wherein the gas metering hole is located away from the gas port.

5. A firearm comprising:

a bolt carrier;

a weight movably disposed within the bolt carrier, the weight being configured to inhibit rearward and forward bouncing of the bolt carrier; and

first and second springs that centrally bias the weight.

6. The firearm as recited in Claim 5, wherein the weight is configured to slide within the bolt carrier.

7. The firearm as recited in Claim 5, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a forwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

8. The firearm as recited in Claim 5, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a rearwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

9. The firearm as recited in Claim 5, wherein the weight is configured to impact an anvil after a bolt engages bolt lugs of a firearm so as to inhibit bouncing of the bolt carrier.

10. The firearm as recited in Claim 5, wherein the weight is configured to impact an anvil after a buffer of the bolt carrier contacts a rear wall of a receiver of a firearm so as to inhibit bouncing of the bolt carrier.

11. The firearm as recited in Claim 5, further comprising:
a cavity formed within the bolt carrier and within which the weight slides.

12. The firearm as recited in Claim 5, further comprising:
a cavity formed within the bolt carrier and within which the weight slides;
and
two plungers upon which the springs are disposed.

13. The firearm as recited in Claim 5, wherein the weight is generally cylindrical in shape.

14. The firearm as recited in Claim 5, further comprising:

a first cavity formed within the bolt carrier and within which the weight slides;

two plungers upon which the springs are disposed;

a second cavity and a third cavity formed within the weight, one spring and one plunger being disposed within each of the second cavity and the third cavity; and

wherein the second cavity and the third cavity have blocking shoulders that prevent the plunger disposed therein from moving beyond a centered position of the plunger so that when inertia moves the weight beyond a centered position of the weight one plunger compresses a spring to return the weight to center while the other plunger and spring are blocked from acting upon the weight.

15. The firearm as recited in Claim 14, further comprising an anvil configured to hold the weight, the springs, and the plungers within the bolt carrier.

16. The firearm as recited in Claim 15, wherein the weight is configured to impact against the anvil during forward and rearward travel of the weight.

17. The firearm as recited in Claim 15, further comprising a pin configured to hold the anvil at least partially within the bolt carrier.

18. The firearm as recited in Claim 5, wherein the bolt carrier is modified to function in guns that are driven by an operating rod and piston.

19. A method of assembling a firearm comprising:

providing a bolt carrier;

movably disposing a weight within the bolt carrier;

providing first and second springs that centrally bias the weight; and

wherein the weight is configured to inhibit rearward and forward bouncing of the bolt carrier.

20. The method as recited in Claim 19, wherein the weight is configured to slide within the bolt carrier.

21. The method as recited in Claim 19, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a forwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

22. The method as recited in Claim 19, wherein the weight is configured to impact an anvil after the bolt carrier begins to bounce away from a rearwardmost position of the bolt carrier so as to inhibit bouncing of the bolt carrier.

23. The method as recited in Claim 19, wherein the weight is configured to impact an anvil after a bolt engages bolt lugs of a firearm so as to inhibit bouncing of the bolt carrier.

24. The method as recited in Claim 19, wherein the weight is configured to impact an anvil after a buffer of the bolt carrier contacts a rear wall of a receiver of a firearm so as to inhibit bouncing of the bolt carrier.

25. The method as recited in Claim 19, wherein the bolt carrier comprises a cavity within which the weight slides.

26. The method as recited in Claim 19,

wherein the bolt carrier comprises a cavity within which the weight slides and wherein the springs are disposed on two plungers.

27. The method as recited in Claim 19, wherein the weight is generally cylindrical in shape.

28. The method as recited in Claim 19, wherein:

the bolt carrier comprises a first cavity within which the weight slides;

the springs are disposed on two plungers;

the weight comprises a second cavity and a third cavity;

one spring and one plunger are disposed within each of the second cavity and the third cavity; and

the second cavity and the third cavity have blocking shoulders that prevent the plunger disposed therein from moving beyond a centered position of the plunger so that when inertia moves the weight beyond a centered position of the weight one plunger compresses a spring to return the weight to center while the other plunger and spring are blocked from acting upon the weight.

29. The method as recited in Claim 28, wherein an anvil is configured to hold the weight, the springs, and the plungers within the bolt carrier.

30. The method as recited in Claim 29, wherein the weight is configured to impact against the anvil during forward and rearward travel of the weight.

31. The method as recited in Claim 29, wherein a pin is configured to hold the anvil at least partially within the bolt carrier.

32. The method as recited in Claim 19, wherein the bolt carrier is modified to function in guns that are driven by an operating rod and piston.