



US 20120246987A1

(19) **United States**

(12) **Patent Application Publication**
Anthony

(10) **Pub. No.: US 2012/0246987 A1**

(43) **Pub. Date: Oct. 4, 2012**

(54) **RECOIL, SOUND AND FLASH SUPPRESSOR**

(52) **U.S. Cl. 42/1.06**

(76) **Inventor: Stephen D. Anthony, Madisonville, KY (US)**

(21) **Appl. No.: 13/065,943**

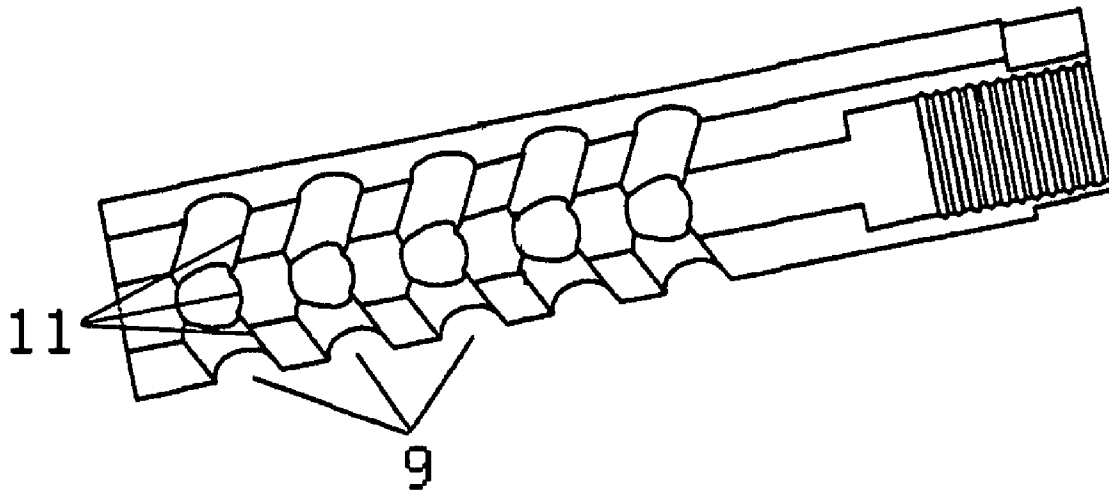
(22) **Filed: Apr. 1, 2011**

Publication Classification

(51) **Int. Cl.**
F41A 21/36 (2006.01)
F41A 21/34 (2006.01)

(57) **ABSTRACT**

A Recoil, Sound and Flash Suppressor that is machined from a solid metal bar of a diameter determined by weapon caliber and mechanically attached to the end of said weapon's muzzle, with a series of gas ports radially machined to vent gas and create a unique scalloped chamber that is solely held integral by the outer body of said device to sequentially dissipate gas, sound and flash and negate most muzzle movement.



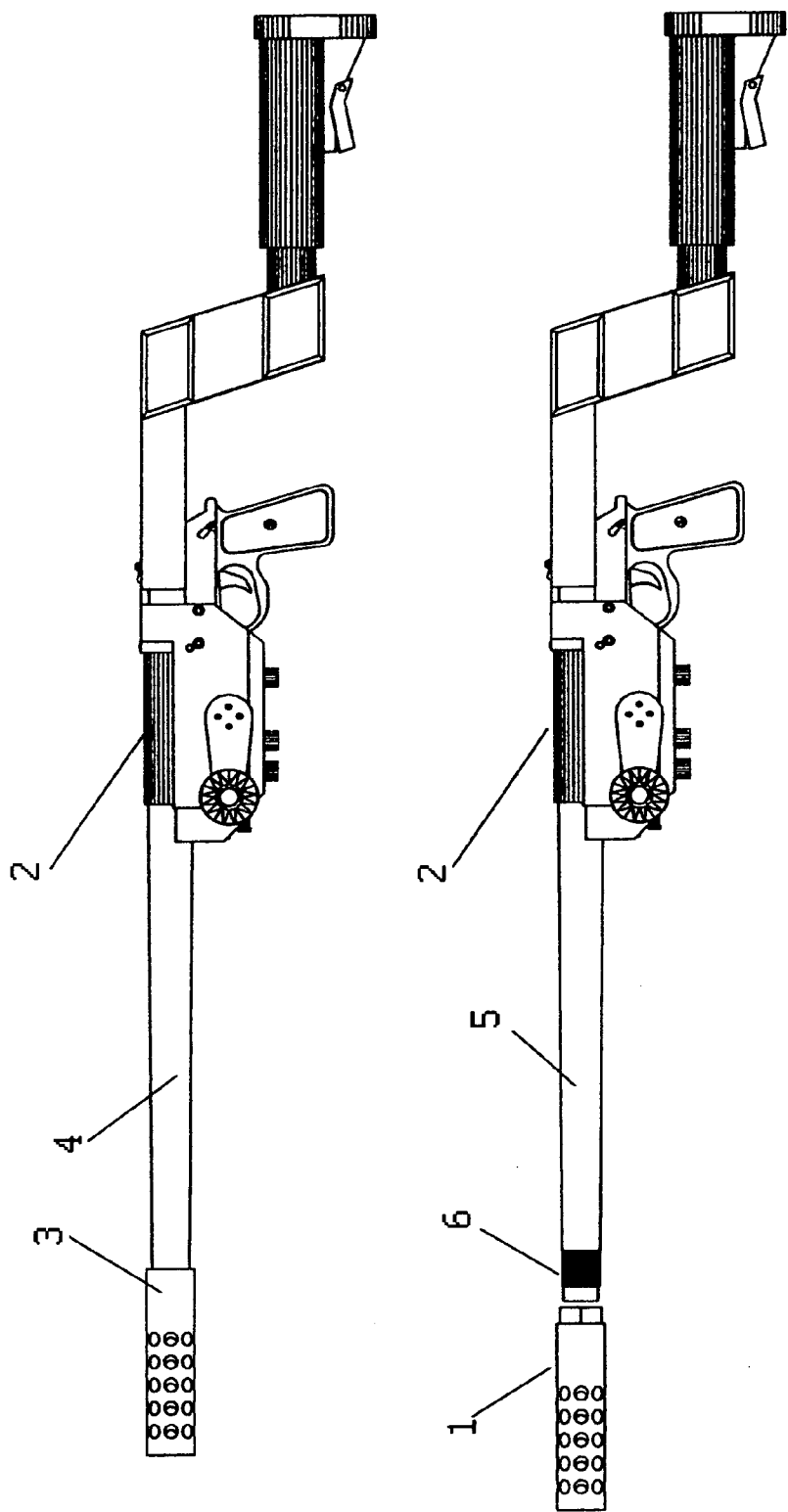


FIG. 1

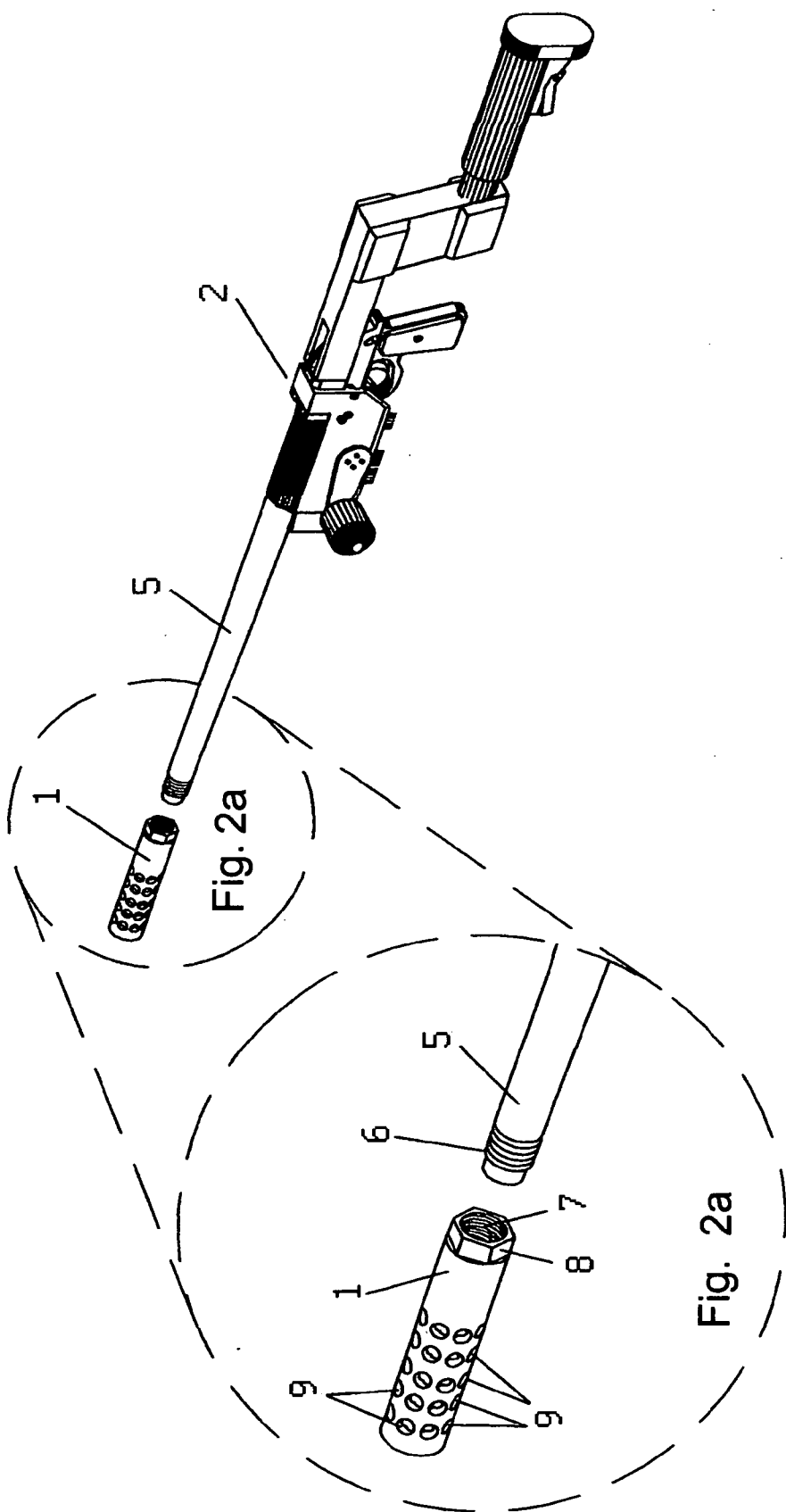


FIG. 2

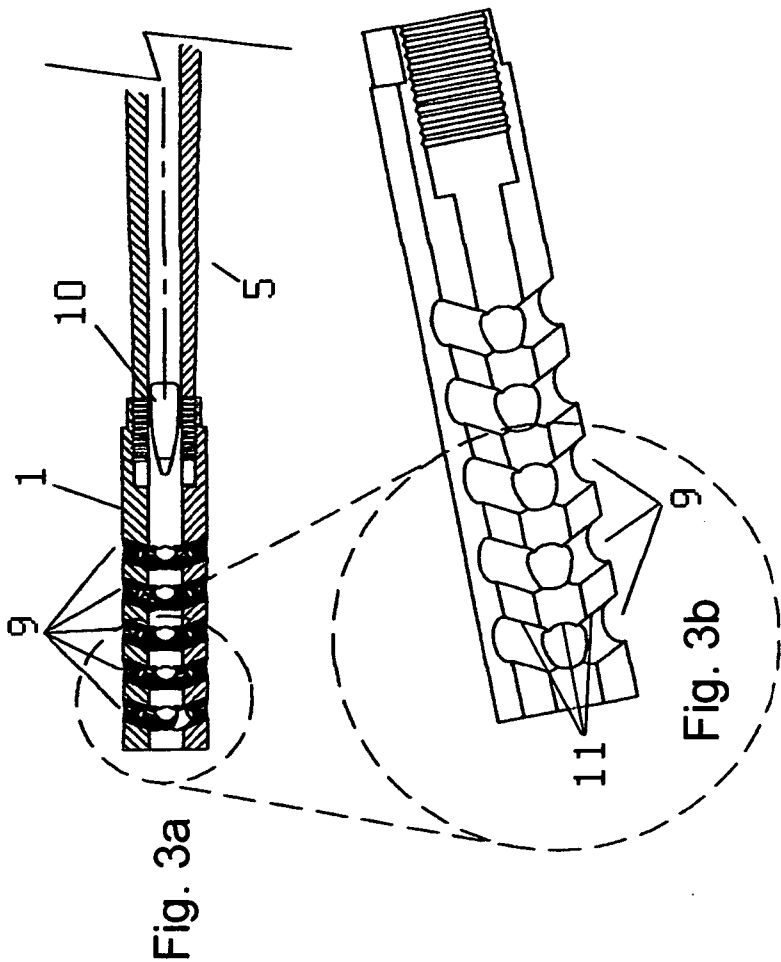


FIG. 3

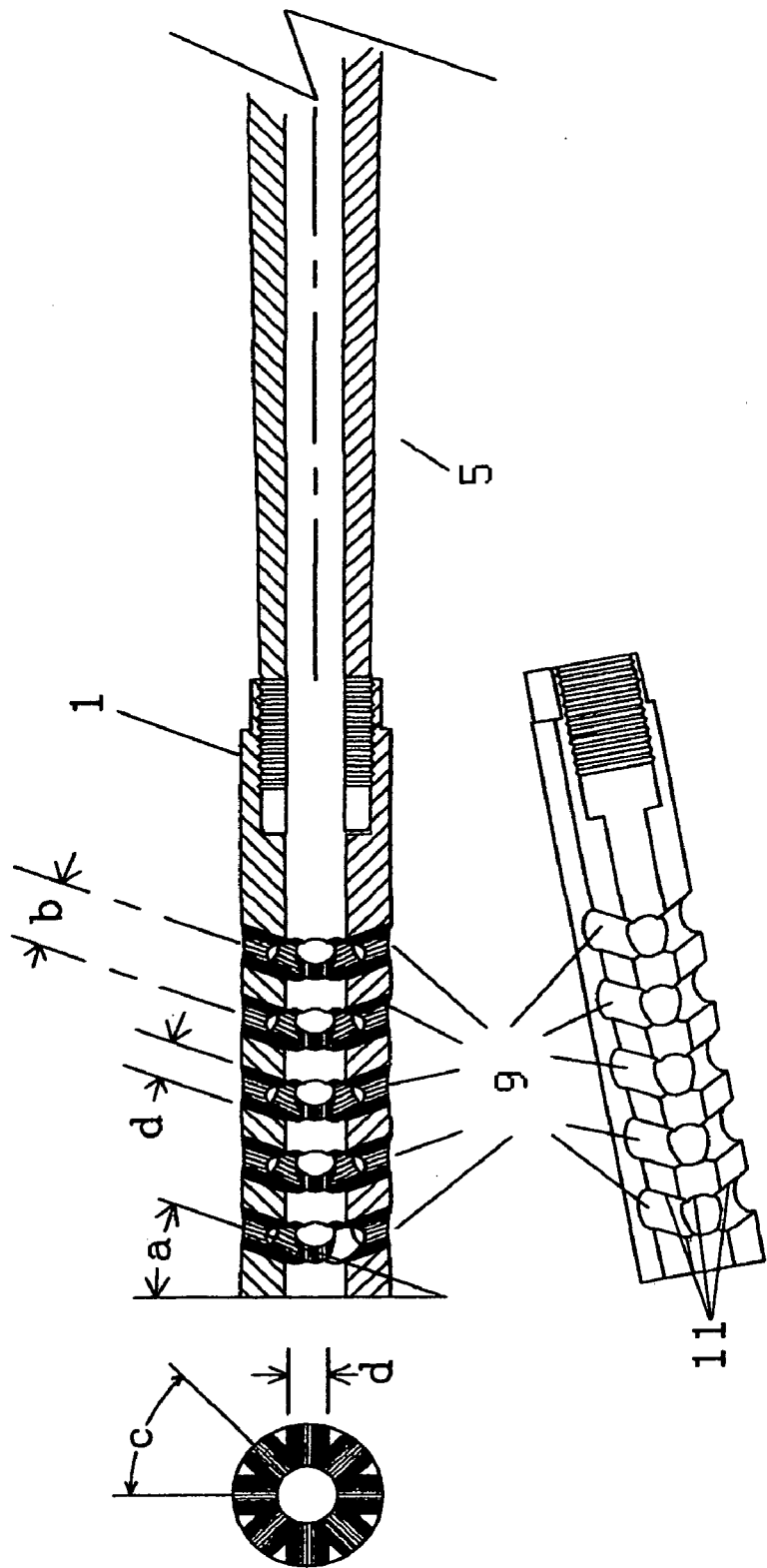


FIG. 4

RECOIL, SOUND AND FLASH SUPPRESSOR

CROSS REFERENCES TO RELATED APPLICATIONS

[0001] Provisional Application for Patent No. 61/335,382 of 01610 with title "Recoil Suppressor" which is hereby incorporated by reference. Applicant claims priority pursuant to 35 U.S.C. Paragraph 119(c).

[0002] U.S. Pat. No. 3,707,899 issued to Walter E. Perrine and U.S. Pat. No. 4,545,285 issued to Clifford E. McLain are the muzzle brake patents that come closest to the new invention. However, neither of those muzzle brakes direct the expulsion of combustion gas toward the breech, and neither creates the internal geometry to efficiently suppress sound and flash.

COPYRIGHT NOTICE

[0003] A portion of the disclosure of this patent document contains material which is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all copyright rights whatsoever.

STATEMENT AS TO RIGHTS TO INVENTION MADE UNDER FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

[0004] Not Applicable.

BACKGROUND OF INVENTION

[0005] 1. Field of Invention This invention relates to a Recoil, Sound and Flash Suppressor such as would be usable for a firearm such as, but not restricted to, a rifle.

[0006] 2. Background Information

[0007] Firearms, including but not limited to rifles, cause a recoil when fired due to the violent release of combustion gases. As will be seen from the subsequent description, the present invention successfully suppresses recoil adequately enough to comfortably shoulder-fire certain firearms such as, but not limited to, .50 caliber rifles that could not be shouldered comfortably, as well as providing significant noise suppression for the shooter and flash suppression for combat situations.

SUMMARY OF THE INVENTION

[0008] The embodiment of this invention, a Recoil, Sound and Flash Suppressor overcomes the present ineffectiveness in attached muzzle devices by using combustion gas thrust through the vents to effectively negate what escapes the muzzle while at the same time diminishing sound and flash through the unique geometry formed by the machining of said vent ports, which heretofore provides a sequential dispersant of the aforementioned gases.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 illustrates a rifle with a Recoil, Sound and Flash Suppressor machined as a permanent part of it as well as a rifle with threads machined on the barrel for use with the present invention in its removable embodiment.

[0010] FIG. 2 illustrates how the removable embodiment of the Recoil, Sound and Flash Suppressor is attached to a firearm.

[0011] FIGS. 3 and 4 illustrate the how the present invention works to suppress recoil, sound and flash.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] Referring to FIG. 1, the top illustration shows a large caliber rifle 2 with the fixed or permanent embodiment of the Recoil, Sound and Flash Suppressor 3 machined to the rifle barrel 4 as one part. The bottom illustration on FIG. 1 shows how the removable embodiment of the Recoil, Sound and Flash Suppressor 1 with internal threads machined in the end of it can be attached to rifle barrel 5 through the use of threads 6 machined on to the end of barrel 5.

[0013] Referring to FIG. 2, the Recoil, Sound and Flash Suppressor 1 is attachable to rifle 2, or other firearm, with the use of internal threads 7 and hex area 8 which allows a wrench to tighten or loosen the removable Recoil, Sound and Flash Suppressor 1 and attach it to barrel 5 which has threads 6 machined on the end of it. Ports/holes 9 are machined to allow controlled escape of pressurized combustion gases from within the newly designed removable Recoil, Sound and Flash Suppressor 1 and the permanently attached Recoil, Sound and Flash Suppressor 3. Recoil, Sound and Flash Suppressor 1 and Recoil, Sound and Flash Suppressor 3 are the same with the exception that Recoil, Sound and Flash Suppressor 3 is permanently attached and Recoil, Sound and Flash Suppressor 1 is removable by adding threads to both the Recoil, Sound and Flash Suppressor 3 and rifle barrel 4. With that in mind, all further references in this Application to Recoil, Sound and Flash Suppressor 1 and Recoil, Sound and Flash Suppressor 3 shall be stated as Recoil, Sound and Flash Suppressor 1.

[0014] FIG. 3 illustrates a cross section and blow-up of the internal structure of the Recoil, Sound and Flash Suppressor 1. The importance of this design is that the exact calculation of the diameter of the ports/holes 9, the exact angle at which they are machined in to the newly designed Recoil, Sound and Flash Suppressor 1, and the exact spacing, provides an overlapped scalloped area 11 on the inside of the newly designed Recoil, Sound and Flash Suppressor 1.

[0015] At each row of ports 9 which encircles the Recoil, Sound and Flash Suppressor 1, there is formed on the inside bore a cavity which captures the combustion gas that follows the bullet 10 as it travels along barrel 5 (barrel 4 for the permanently attached embodiment of the current invention). These cavities on the inside of the Recoil, Sound and Flash Suppressor 1 greatly increase the amount of gas that is captured and redirected out of ports 9 and thus increases the recoil, Sound and flash reduction of the weapon 2. The diameter of these ports 9, the angle at which these ports 9 are bored and the spacing of these ports 9 is a precise calculated value based on the caliber of the weapon for which Recoil, Sound and Flash Suppressor 1 is being designed. The Recoil, Sound and Flash Suppressor 1 would be adapted to weapons using different caliber ammunition by taking the figures used for a .50 caliber ammunition and precisely scaling them down for a weapon using smaller caliber ammunition and scaling them up for a weapon using larger caliber ammunition.

[0016] FIG. 4 gives a look at the Recoil, Sound and Flash Suppressor 1 from an end view, a cross section view, and an

internal view and shows the measurements and angles of the Recoil, Sound and Flash Suppressor **1**.

“a” is the angle at which the ports **9** are machined;

“b” is the linear spacing for the ports **9**;

“c” is the circumference angle around the Recoil, Sound and Flash Suppressor **1**; and

“d” is the diameter of ports **9**.

[0017] The resulting scalloped area **11** will capture the escaping combustion gasses and redirect the gasses out ports **9** at an angle away from the end of barrel **5** and slightly toward the shooter.

[0018] The ratios of these values to each other would change depending on the caliber of the ammunition. As stated above, the Recoil, Sound and Flash Suppressor **1** would be adapted to weapons using different caliber ammunition by scaling up or down to match the size of the weapon and the ammunition it uses.

[0019] Description of Operation:

[0020] In FIG. **3**, a bullet **10** is shown being fired through barrel **4**. The resulting combustion gases as the bullet **10** exits the Recoil, Sound and Flash Suppressor **1** would be directed out ports **9** at an angle back toward the breech. The expulsion of the combustion gases in this direction redirects the backward force of the firearm in a progressive sequential manner as the gas is vented out ports **9** instead of back through the barrel **4** of the firearm. Most existing recoil suppressors direct the combustion gases out at a 90 degree angle.

[0021] Although the description above contains many specificities, these should not be construed as limiting the scope of the invention, but as merely providing illustrations of some of the preferred embodiments of the invention.

[0022] It will be obvious to those skilled in the art, that modifications may be made to the embodiments of the invention described above without departing from the scope of the present invention. Thus, the scope of the invention should be

determined by the appended claims in the formal application and their equivalents rather than by the examples given.

I claim:

1. A Recoil, Sound, and Flash Suppressor for firearms comprising: a generally cylindrical body formed about a longitudinal axis, said body having a first end adapted for connection to a firearm and contained within said body and disposed between said first end and second end defining an axial aperture and a scalloped wall formed by radial geometry of gas ports intersecting the bullet exit port suspended by the outer body wall extending radially outward from said aperture to said body, said wall having at least a portion thereof angularly disposed relative to said axis.

2. A Recoil, Sound, and Flash Suppressor according to claim 1, wherein said angularly scalloped disposed portion of said internal wall defines an acute angle relative to said axis.

3. A Recoil, Sound, and Flash Suppressor according to claim 1, wherein said angularly disposed scalloped chambers define an acute angle relative to said axis.

4. A matched expansion Recoil, Sound, and Flash Suppressor aligned with the forward end of a firearm barrel and bore including:

- (a) a tube having a uniform diameter through bore equal to and coincident with said barrel bore;
- (b) a plurality of outwardly diverging gas ports opening into said through bore forming unique scalloped chambers;
- (c) said gas ports each including suspended chambers adjacent said opening into said through bore;
- (d) the combined entrance area of all of said suspended chambers means having a cross sectional area substantially equal to the cross-sectional area of said through bore so that the mass flow of the propellant gases flowing through said gas ports is substantially matched to that available through said barrel bore.

* * * * *