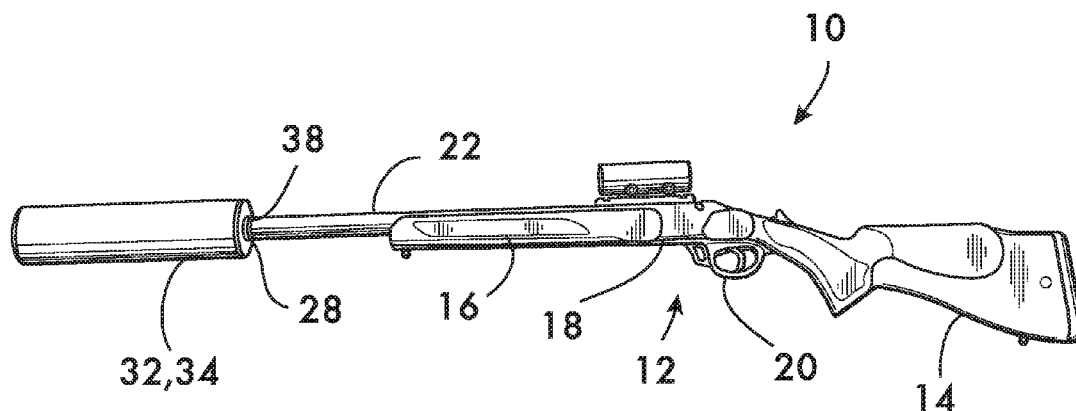




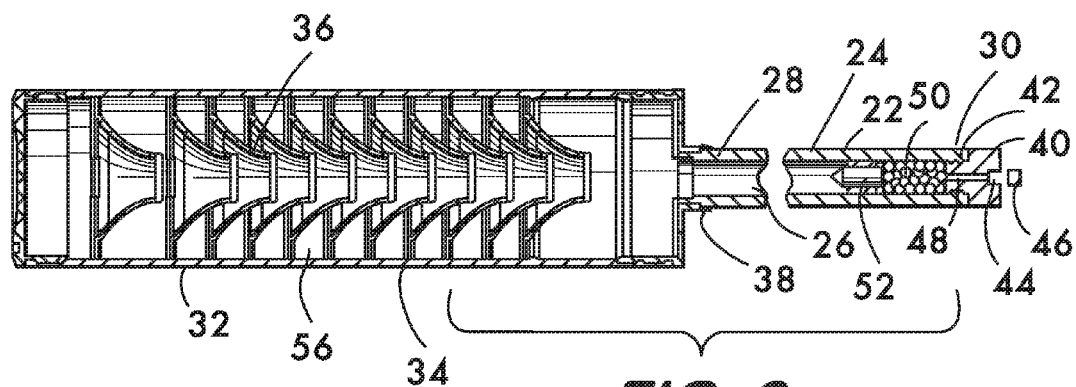
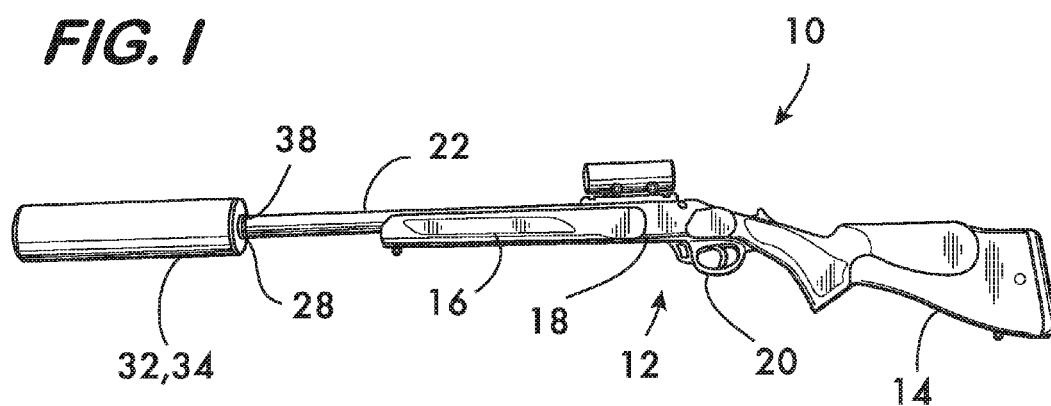
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(19) **United States**(12) **Patent Application Publication****Shults et al.**(10) **Pub. No.: US 2017/0131061 A1**(43) **Pub. Date: May 11, 2017**(54) **METHOD OF LOADING A SOUND  
SUPPRESSED MUZZLE LOADING FIREARM**(71) Applicant: **SilencerCo, LLC**, West Valley City, UT  
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**Harrison Holden**, Sandy, UT (US);  
**Casey Brandol**, West Jordan, UT (US)(21) Appl. No.: **15/413,672**(22) Filed: **Jan. 24, 2017****Related U.S. Application Data**(62) Division of application No. 14/695,207, filed on Apr.  
24, 2015.**Publication Classification**(51) **Int. Cl.**  
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(2013.01); **F41C 9/08** (2013.01); **F41A 9/38**  
(2013.01)(57) **ABSTRACT**

A muzzle loading firearm has a sound suppressor mounted on the barrel. Attachment of the suppressor to the barrel may be permanent, as by welding, brazing and adhesive bonding. A guide tube inserted into the suppressor is used to provide a continuous path from the open end of the suppressor to the muzzle end of the barrel to permit loading of propellant charge and projectile from the muzzle end. The guide tube isolates the chambers of the suppressor and prevents grains of the propellant charge from being lost in the suppressor as they are poured into the barrel. The tube also protects the internal components of the suppressor from damage during loading with a ramrod.

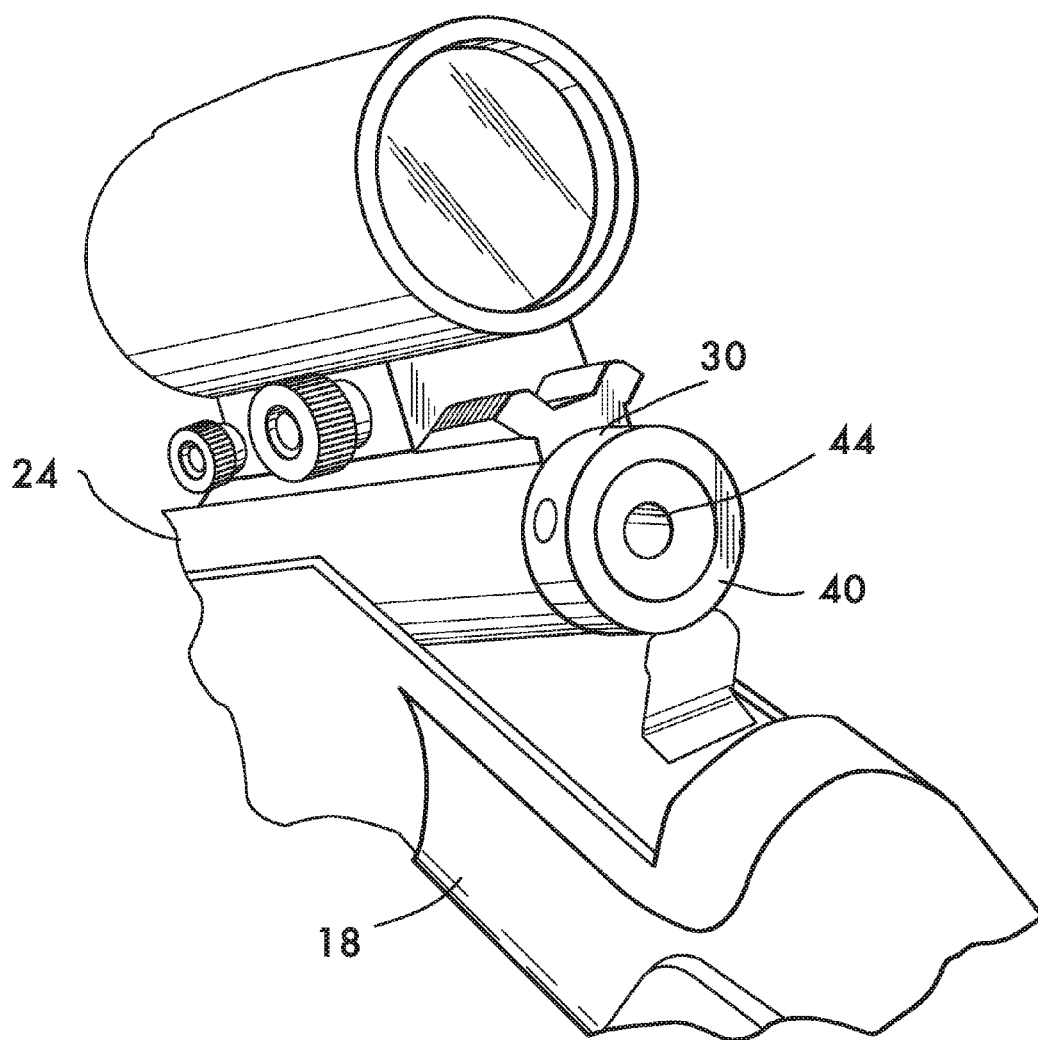


**FIG. 1**

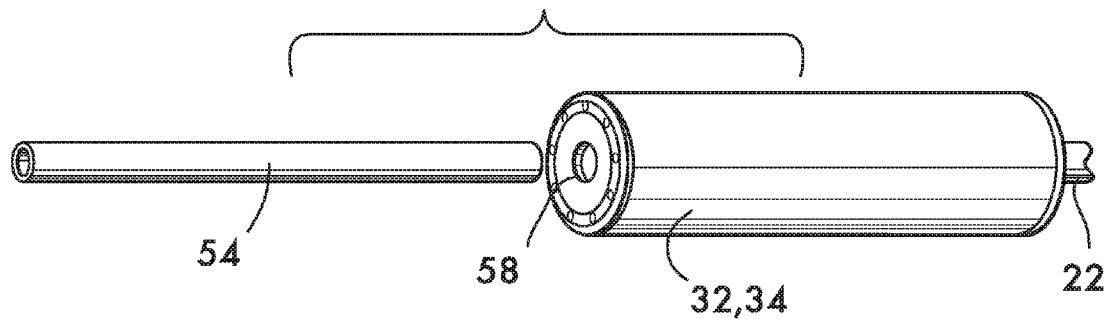


**FIG. 2**

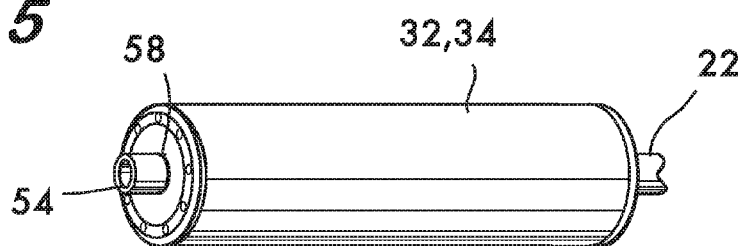
**FIG. 3**



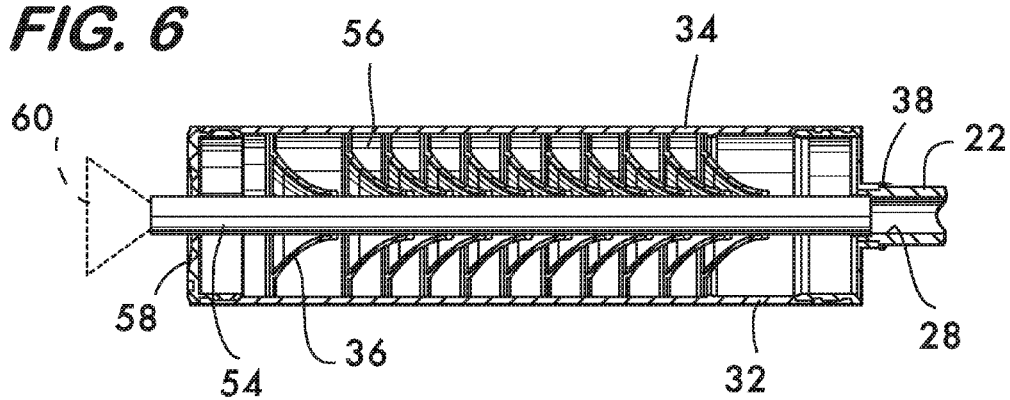
**FIG. 4**

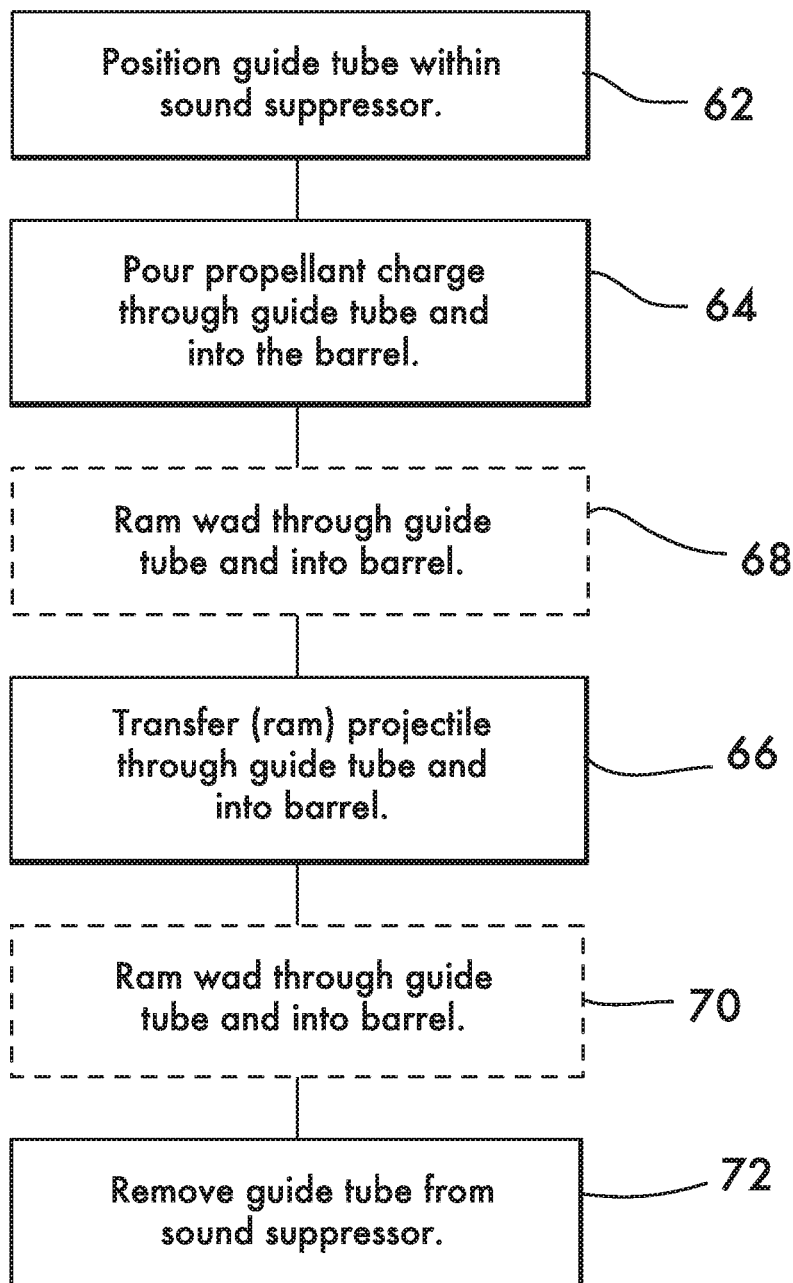


**FIG. 5**



**FIG. 6**





**FIG. 7**

## METHOD OF LOADING A SOUND SUPPRESSED MUZZLE LOADING FIREARM

### CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a divisional of and claims priority to U.S. patent application Ser. No. 14/695,207, filed Apr. 24, 2015, hereby incorporated by reference herein in its entirety.

### FIELD OF THE INVENTION

[0002] This invention concerns muzzle loading firearms.

### BACKGROUND

[0003] Muzzle loading firearms, especially long guns such as muskets and rifles, enjoy increasing popularity as sporting arms for hunting and target shooting. Muzzle loaders, with their single shot and slow burning black powder (or modern equivalents) present exceptional challenges to prove the skill of marksmen on the target range or in the field stalking game.

[0004] With the increasing popularity of muzzle loaders there comes a concomitant increase in exposure of individuals to the noise of discharge. There are various advantages to suppressing the discharge noise of muzzle loading firearms, for example, to mitigate hearing loss to shooters as well as to make shooting more comfortable. This invention provides both a device and a method that solves challenges inherent to adapting sound suppression technology to traditional muzzle loading firearms.

### SUMMARY

[0005] The invention concerns a method of loading a muzzle loading firearm having a sound suppressor attached to a muzzle end of a barrel. One example method comprises:

[0006] positioning a guide tube within the sound suppressor, the guide tube extending from an open end of the sound suppressor to the muzzle end of the barrel;

[0007] pouring a propellant charge through the guide tube into the barrel; and

[0008] transferring a projectile through the guide tube into the barrel.

[0009] By way of example the method further comprises removing the guide tube from the sound suppressor. In a particular example, transferring the projectile comprises ramming the projectile through the guide tube and into the barrel. A further example comprises transferring a wad through the guide tube and into the barrel. By way of example, transferring the wad comprises ramming the wad through the guide tube and into the barrel.

[0010] In a particular example, positioning the guide tube within the sound suppressor comprises fitting a portion of the guide tube within the muzzle end of the barrel. A further example comprises positioning the guide tube within the sound suppressor so that a portion of the guide tube extends outwardly from the sound suppressor.

[0011] The invention further encompasses a kit for loading the barrel. In a specific example embodiment, the kit includes a guide tube removably positionable within the sound suppressor. The guide tube extends between an open end of the sound suppressor to the muzzle end of the barrel. In another example, the guide tube has a length sized to extend from the muzzle end of the tube and project out-

wardly from the open end of the sound suppressor. In a further example embodiment, at least a portion of the guide tube has an outer diameter sized to fit within a bore of the barrel. In a particular example, a funnel is positioned on an end of the guide tube.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a side view of an example muzzle loading firearm according to the invention;

[0013] FIG. 2 is a longitudinal sectional view of an example barrel according to the invention;

[0014] FIG. 3 is an isometric view of a part of the firearm shown in FIG. 1;

[0015] FIGS. 4 and 5 are isometric views illustrating an example method of loading a muzzle loading firearm according to the invention;

[0016] FIG. 6 is a longitudinal sectional view illustrating an example method of loading a muzzle loading firearm according to the invention; and

[0017] FIG. 7 is a flow chart illustrating illustrating an example method of loading a muzzle loading firearm according to the invention.

### DETAILED DESCRIPTION

[0018] FIG. 1 shows a modern muzzle loading firearm 10, in this example a long gun. Firearm 10 comprises a stock 12 including a shoulder stock 14 and a fore stock 16 attached to a receiver 18. A trigger assembly 20 is mounted on the stock, the trigger assembly for discharging the firearm. A barrel 22 is also mounted on the stock 12. Barrel 22 is shown in detail in FIG. 2 and comprises a tube 24 having a bore 26 (which may be smooth or rifled), a muzzle end 28 and an opposite end 30.

[0019] A sound suppressor 32 is attached to the muzzle end 28 of tube 24. In this example the sound suppressor 32 comprises a container 34 surrounding a plurality of baffles 36. Sound suppressor 32 is attached to the muzzle end 28 of tube 24 via a permanent attachment 38 between the container 34 and the tube 24. Examples of permanent attachments 38 include welding, brazing and adhesive bonding using, for example, an epoxy. It is understood that other forms of attachment between the suppressor and the tube are also feasible, such as a threaded attachment or a quick release attachment.

[0020] In the example firearm shown in FIGS. 2 and 3 the receiver 18 breaks open to expose end 30 of tube 24. End 30 is closed by a fitting 40, the fitting engaging tube 24 via matching screw threads 42. Fitting 40 has a well 44 adapted to receive a shock sensitive primer charge 46, and a duct 48 communicating between the well and the bore 26 of tube 24. Closed end 30 of tube 24 cooperates with the trigger assembly 20 to discharge the firearm 10. As is well understood, discharge of the firearm 10 occurs when the trigger assembly 20 releases a cocked hammer or other striker (not shown) that hits and ignites the primer charge 46, causing a flame front to travel through the duct 48 and ignite a propellant charge 50 within the closed end 30 of tube 24. The burning propellant charge 50 produces hot expanding gases that propel a projectile 52, for example, a sabot round, along the bore 26 of tube 24 and out of the barrel 22. The baffles 36 of sound suppressor 32 dissipate the energy of the gases as they exit barrel 22 and reduce the noise of discharge. While this description addresses modern muzzle

loading firearms that have a receiver that breaks open to permit replacement of the primer charge, the invention is applicable to other types of muzzle loading firearms such as percussion cap and flint lock systems, which may not have a receiver per se.

[0021] With the sound suppressor 32 attached to the muzzle end 28 of tube 24, additional measures are taken to ensure the proper loading of the propellant charge 50 and the projectile 52. Loading is accomplished using a guide tube 54, as shown in FIGS. 4-6. As shown in FIGS. 4 and 5, guide tube 54 is inserted into the sound suppressor 32 prior to loading of the propellant charge and the projectile. As shown in FIG. 6, the guide tube 54 isolates the chambers 56 formed within the container 34 by the baffles 36 and provides a continuous path from the open end 58 of the suppressor to the muzzle end 28 of the barrel 22. The guide tube 54 thus prevents a portion of the propellant charge from being “lost” in one or more of the chambers 56 of the sound suppressor 32, thereby ensuring that a full measure of the propellant charge reaches the opposite end 30 of the tube 24 (see FIG. 2). Guide tube 54 also protects the baffles 36 from damage which might occur when a projectile is rammed home into the barrel 22 by a ramrod.

[0022] As shown in FIGS. 5 and 6, it is advantageous to size the length of the guide tube 54 so that it extends from the muzzle end 28 of the tube 24 and projects outwardly from the open end 58 of the suppressor 32. Further advantage may be had by sizing the outer diameter of the guide tube 54 so that it fits within the bore 26 of tube 24. Additionally, it is feasible to flare the exposed end of the guide tube to form a funnel 60 (shown in broken line) to mitigate spillage of loose powder comprising the propellant charge. With the guide tube 54 thus dimensioned it can serve as an effective tool for loading a sound suppressed muzzle loading firearm. It is advantageous to make guide tube 50 from plastic, and metals are also feasible.

[0023] A method for loading a sound suppressed muzzle loading firearm is illustrated in the flow chart of FIG. 7. At 62, the guide tube is positioned within the sound suppressor. As shown in FIGS. 4-6, the guide tube 54 is advantageously positioned so that it extends from the open end 58 of the suppressor 32 to the muzzle end 28 of tube 24. At 64 of FIG. 7, a measured propellant charge 50 is poured through the guide tube 54 and into barrel 22 (see also FIG. 2). Next, as illustrated at 66, the projectile 52 is transferred through the guide tube and into the barrel 22 (see also FIG. 2). If the projectile is, for example, an oversized sabot round, then it will be necessary to use a ramrod to drive the round home. If the projectile is an undersized ball, then it is appropriate to ram wads through the guide tube and into the barrel before and after the projectile as indicated at 68 and 70 of FIG. 7,

shown in broken line. Prior to discharge the guide tube is removed (72) and the primer charge is positioned in fitting 40.

[0024] Suppressed muzzle loading firearms are expected to provide advantageous shooting for both target sports and hunting by providing a firearm that can be reliably charged with powder and projectile using a kit including the guide tube according to the example method disclosed herein.

What is claimed is:

1. A method of loading a muzzle loading firearm having a sound suppressor attached to a muzzle end of a barrel, said method comprising:

positioning a guide tube within said sound suppressor, said guide tube extending from an open end of said sound suppressor to said muzzle end of said barrel; pouring a propellant charge through said guide tube into said barrel; and transferring a projectile through said guide tube into said barrel.

2. The method according to claim 1, further comprising removing said guide tube from said sound suppressor.

3. The method according to claim 1, wherein transferring said projectile comprises ramming said projectile through said guide tube and into said barrel.

4. The method according to claim 1, further comprising transferring a wad through said guide tube and into said barrel.

5. The method according to claim 4, wherein transferring said wad comprises ramming said wad through said guide tube and into said barrel.

6. The method according to claim 1, wherein positioning said guide tube within said sound suppressor comprises fitting a portion of said guide tube within said muzzle end of said barrel.

7. The method according to claim 1, further comprising positioning said guide tube within said sound suppressor so that a portion of said guide tube extends outwardly from said sound suppressor.

8. A kit for loading a muzzle loading firearm having a barrel with a sound suppressor attached to a muzzle end thereof, said kit including a guide tube removably positionable within said sound suppressor and extending between an open end thereof to said muzzle end of said barrel.

9. The kit according to claim 8, wherein said guide tube has a length sized to extend from said muzzle end of said barrel and project outwardly from said open end of said sound suppressor.

10. The kit according to claim 8, wherein at least a portion of said guide tube has an outer diameter sized to fit within a bore of said barrel.

11. The kit according to claim 8, wherein a funnel is positioned on an end of said guide tube.

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