

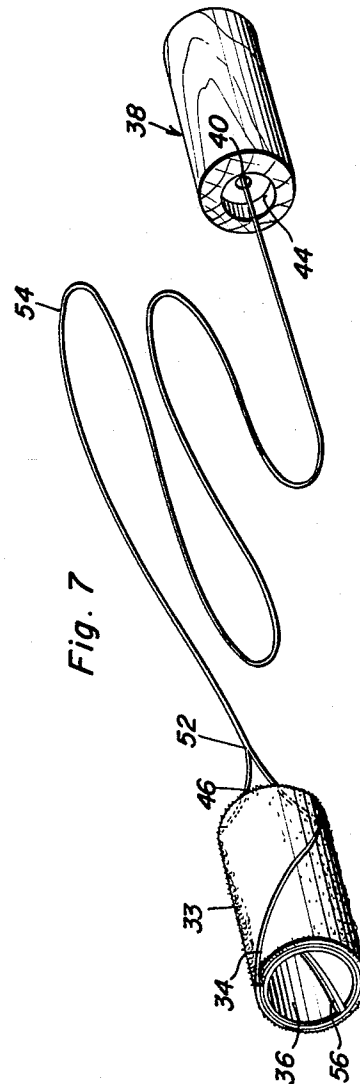
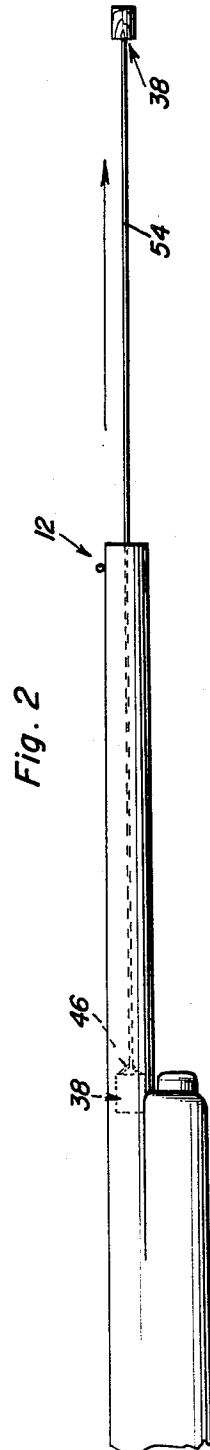
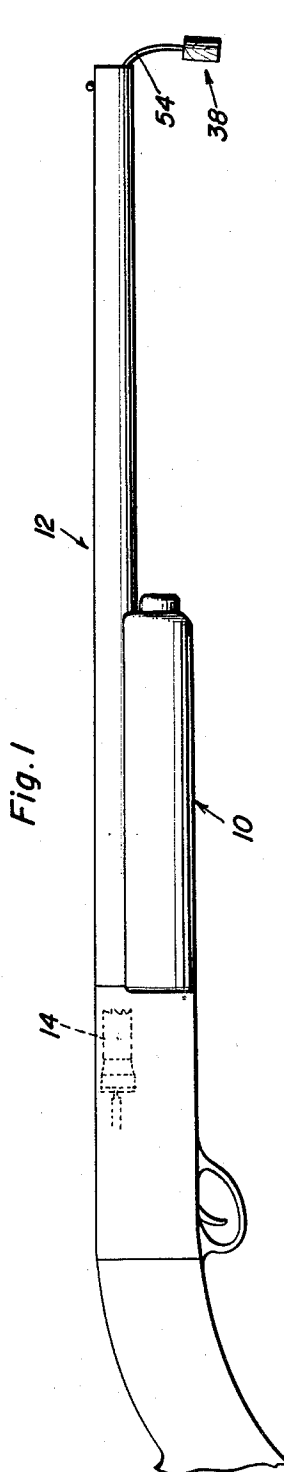
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D. J. FERGUSON
CLEANING SHELL FOR SHOTGUNS

3,147,708

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3 Sheets-Sheet 1



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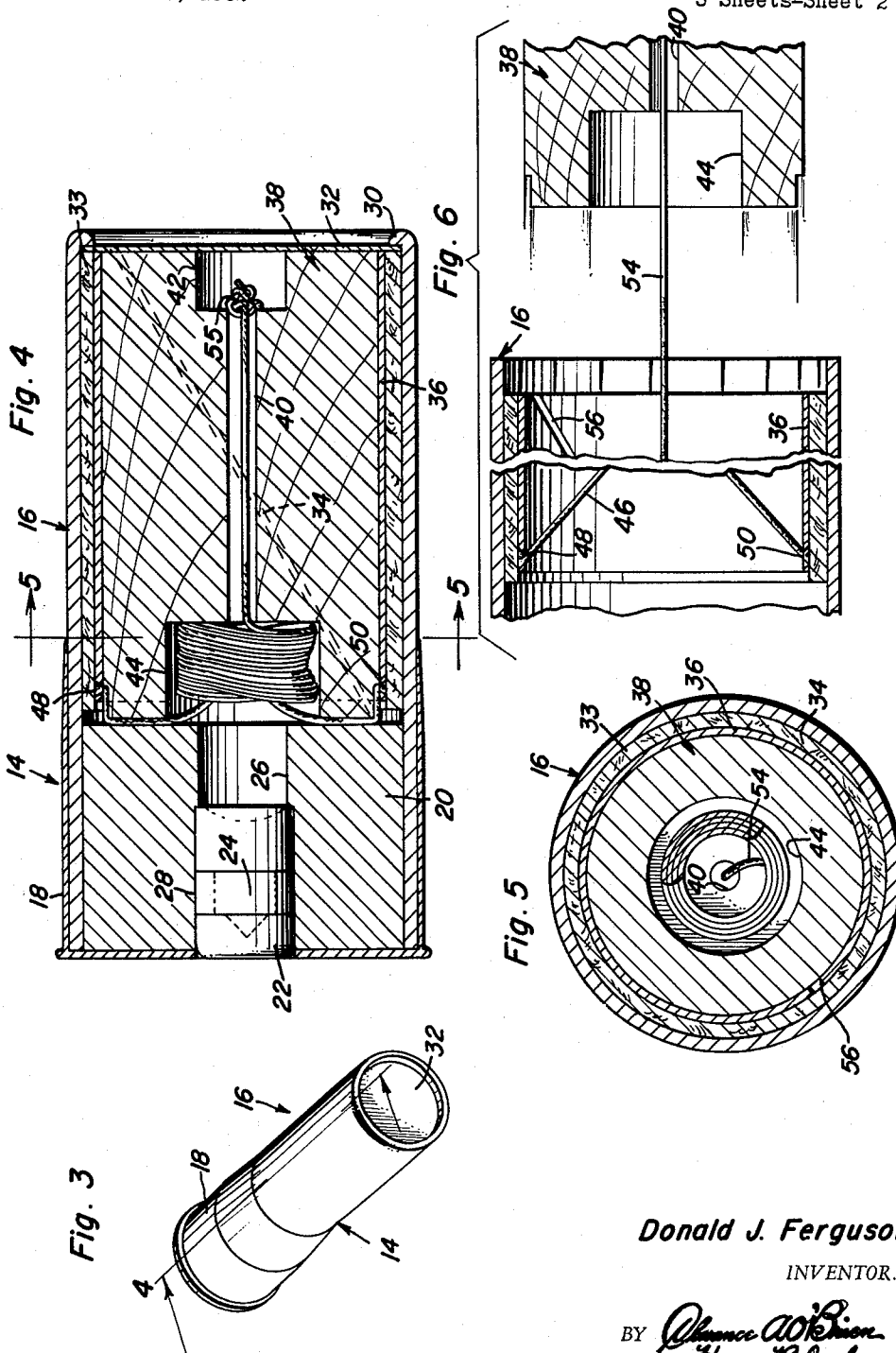
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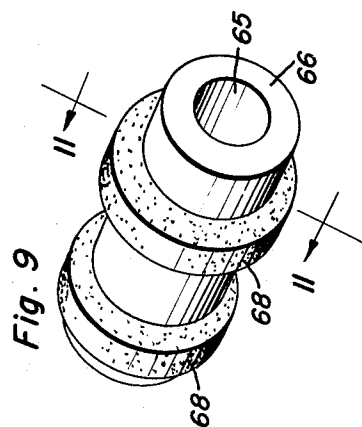
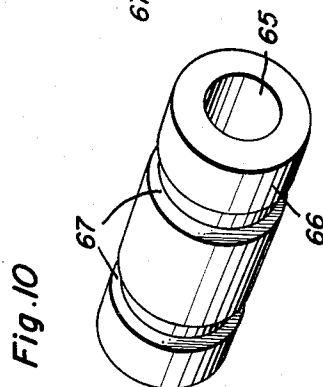
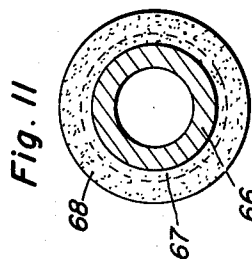
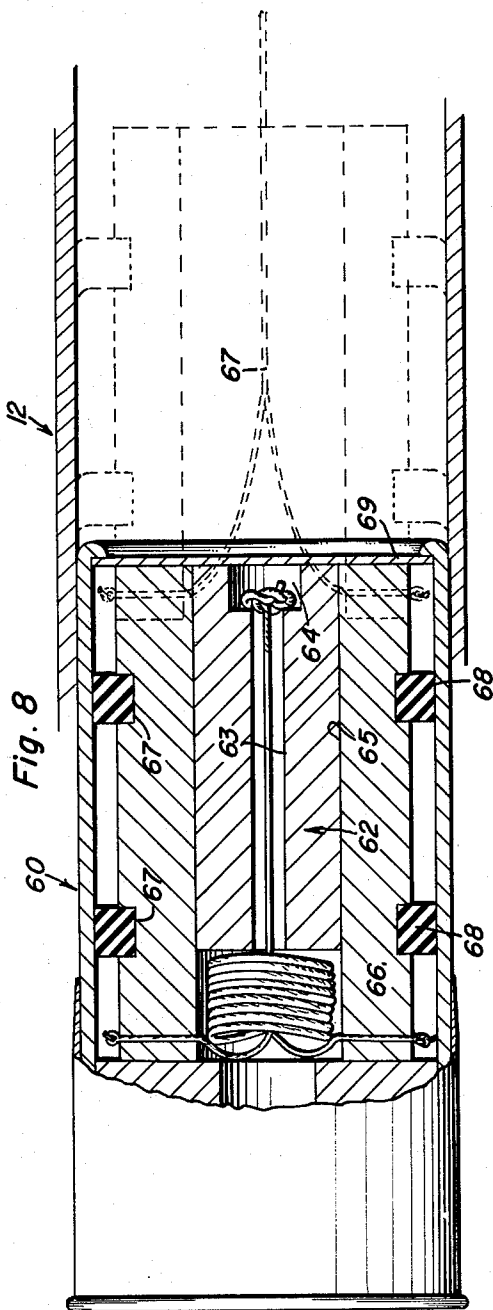
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CLEANING SHELL FOR SHOTGUNS

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3 Sheets-Sheet 3



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CLEANING SHELL FOR SHOTGUNS

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12 Claims. (Cl. 102—41)

This invention relates to a novel and useful cleaning shell and more specifically to a shell or cartridge designed to be fired in a gun bore in the conventional manner for the purpose of projecting a projectile through the bore of the gun having bore cleaning means attached thereto.

The cleaning shell or cartridge of the instant invention has been designed to provide a fast and easy way to clean a gun barrel bore. The cleaning shell is to be inserted into the firing chamber of a barrel and then the shell is fired. The shell utilizes only the conventional primer as a propelling force inasmuch as it is desired to provide only sufficient propelling force to force the projectile through the gun barrel.

The projectile may be projected through the barrel of a gun upon the firing of the primer of the shell and the projectile is tethered to a bore cleaning member which is retained within the shell until such time as a forceful pull is exerted on the tethering means sufficient to draw the cleaning member through the gun barrel.

The main object of this invention is to provide a cleaning shell for shotguns and the like which may be inserted and fired within a gun in the conventional manner and utilized to project a projectile through the gun barrel having cleaning means attached thereto whereby as the cleaning means is drawn through the gun barrel the barrel will be cleaned.

A further object of this invention, in accordance with the immediately preceding object, is to provide a cleaning shell which may be readily manufactured in various sizes so as to be accommodated in gun barrels of various diameters.

Still another object of this invention is to provide a cleaning shell which may be readily manufactured by the utilization of numerous components of conventional types of shells and cartridges with only the load and powder charge of a conventional shell or cartridge being omitted in favor of the projectile and bore cleaning means of the cleaning shell of the instant invention during its manufacture.

A final object to be specifically enumerated herein is to provide a cleaning shell in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a fragmentary side elevational view of a conventional type of shotgun having the cleaning shell of the instant invention therein and shown in phantom lines and with the projectile of the cleaning shell and a portion of the means by which the projectile is tethered to the bore cleaning means being shown disposed outwardly of the forward end of the barrel of the gun;

FIGURE 2 is a side elevational view similar to that of FIGURE 1 but showing the bore cleaning means of the cleaning shell being pulled through the gun barrel;

FIGURE 3 is a perspective view of the cleaning shell;

FIGURE 4 is an enlarged longitudinal sectional view taken substantially upon the plane indicated by section line 4—4 of FIGURE 3;

FIGURE 5 is a transverse sectional view taken sub-

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stantially upon the plane indicated by the section line 5—5 of FIGURE 4;

FIGURE 6 is a fragmentary sectional view similar to that of FIGURE 4 but showing the projectile of the shell in the process of being projected outwardly therefrom;

FIGURE 7 is a perspective view of the projectile and bore cleaning means of the cleaning shell;

FIGURE 8 is a side elevational view of a modified form of cleaning shell with parts thereof being broken away and shown in section;

FIGURE 9 is a perspective view of the bore cleaning means of the modified form of cleaning shell shown with the projectile detached therefrom.

FIGURE 10 is a perspective view of the bore cleaning means having the cleaning rings thereof removed; and

FIGURE 11 is a sectional view taken substantially upon the plane indicated by the section line 11—11 of FIGURE 9.

Referring now more specifically to the drawings the numeral 10 generally designates a conventional type of shotgun which includes a barrel 12. The shotgun cleaning shell of the instant invention is generally designated by the reference numeral 14 and is shown in FIGURE 1 of the drawings in phantom lines in the firing chamber of the shotgun 12.

With attention now directed to FIGURE 4 of the drawings it may be seen that the shotgun shell includes a shell case 16 having a head 18. The shell case and head are conventional and rolled paper spacers 20 are disposed in the head 18 forming a cavity in which to receive the primer 22 and the anvil 24 and a passage 26 extending from the primer pocket 28 into the forward end of the shell case 16 remote from the primer 22. It will be noted that the end of the shell case 16 is crimped at 30 for retaining the end cover 32 in place.

The cleaning shell 14 includes a sleeve 33 which is split along a helical path 34 and constructed of fibrous or other suitable material for cleaning the inside of the barrel 12. A split expansion spring 36 is provided and normally yieldably urges the sleeve 33 toward a radially expanded position.

The split expansion ring 36 loosely receives a cylindrical member generally referred to by the reference numeral 38 and the cylindrical member 38 is movable axially of the cylindrical member or sleeve 33.

A longitudinal bore 40 is formed through the cylindrical member and the opposite ends thereof are provided with counterbores 42 and 44. The sleeve 33 has the free ends of a Y-shaped bridle 46 secured thereto at points 48 and 50 disposed diametrically opposite each other and the apex 52 of the Y-shaped bridle 46 is secured to a flexible pull member 54 which may conveniently be constructed of a material having elastomeric properties. The end of the pull member 54 remote from the Y or V-shaped bridle 46 is knotted as at 55 through the bore 40.

The expansion ring 36 is split as at 56 along a helical path and thus it will be noted that the split spring 36 will frictionally engage the sleeve 33 with the inner surfaces of the shell case 16. Inasmuch as the cylindrical member 38 is loosely received within the split spring 36, upon the firing of the primer 22, the cylindrical member 38 and the end cover 32 will be forced outwardly of the end of the shell case 16 remote from the primer 22. Then, as the cylindrical member or projectile 38 moves forwardly through the barrel 12, the coil of the pull member 54 disposed within the counterbore 44 will be unwound until the projectile 38 is in the position viewed in FIGURE 1 of the drawings. Thereafter, the cylindrical member or the adjacent end of the pull member 54 may be grasped in order to pull the sleeve 33 through the barrel 12. The forward movement of the sleeve 33 outwardly of the shell case will enable the expansion spring or

ring 36 to expand the sleeve 33 into tight frictional engagement with the inner surfaces of the barrel 12. Therefore, as the sleeve 33 is pulled through the barrel 12, the internal surfaces thereof will be cleaned.

With attention now directed to FIGURES 8 through 11 of the drawings there will be seen a modified form of cleaning shell generally referred to by the reference numeral 60 which is identical in all respects to the cleaning shell 14 with the exception of the projectile and bore cleaning means thereof. The projectile of the cleaning shell 60 is generally referred to by the reference numeral 62 and is fired from the cleaning shell in the same manner as the projectile or cylindrical member 38 is fired from the cleaning shell 14. However, the cylindrical member or projectile 62 is provided with a longitudinal bore 63 having a counterbore 64 at one end only. The projectile 62 is slidably received in the longitudinal bore 65 formed through the cleaning sleeve 66 which has a pair of circumferentially extending and outwardly opening grooves 67 formed therein. A pair of cleaning rings 68 are seated in the grooves 67. The rings 68 are spaced longitudinally of the sleeve 66 and adjacent the opposite ends thereof. The rings 68 may be constructed of a material which will have an inherent tendency to radially expand the rings 68 in order that, when the projectile 62 is projected from the cleaning shell 60 together with the end cover 69 and the cleaning sleeve 66 is pulled through a gun barrel by means of the pull member which connects the sleeve 66 to the projectile 62, the rings 68 will engage the inner surfaces of the barrel as viewed in FIGURE 8 of the drawings in phantom lines.

Accordingly, it may be seen that the projectile or sleeve 66 of the cleaning shell 60 has the cleaning rings 68 fixed thereto and against axial movement relative to the sleeve 66.

It is of course to be understood that other propulsive means such as a spring could be utilized to project the projectiles 38 and 62 outwardly of the open end of the cleaning shells 14 and 60 and through the gun barrel. In this case, a retaining mechanism would have to be provided for retaining such a spring in a flexed state and it should include an actuator which could be actuated upon engagement by the firing pin of a gun such as the shotgun 10.

The outer dimensions and appearance of each of the cleaning shells 14 and 60, with the exception of there perhaps being proper identifying indicia on the outer surface thereof, will be substantially the same as a conventional type of shell.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A cleaning shell for gun barrels, said cleaning shell comprising a case containing propellant means including an actuator adapted to be actuated from the exterior of a barrel in which cleaning barrel is disposed, a projectile in said case, said case and projectile including coacting means yieldably retaining said projectile in said case, said projectile, upon actuation of said propellant means, being dischargeable from said case and adapted to pass through said barrel, bore cleaning means in said case adapted to be moved through said barrel and to engage and clean the internal surfaces of said barrel upon movement of said cleaning means therethrough, said case and bore cleaning means including coacting means operable to yieldingly retain said bore cleaning means in said case prior to, during and after actuation of said propellant means and resultant discharge of said projectile through said barrel, an elongated flexible pull member connect-

ing said bore cleaning means to said projectile, said propellant means being sufficient only to overcome the first mentioned coacting means and to discharge said projectile outwardly of said casing with sufficient momentum to carry it through an associated barrel in which it is loosely received and inoperative to discharge said projectile outwardly of said case with sufficient momentum to overcome the second mentioned coacting means and to pull said bore cleaning means out of said case.

2. The combination of claim 1 wherein said projectile comprises a cylindrical member and said bore cleaning means comprises a sleeve in which said projectile is slidably received and including at least one ring extending thereabout and radially outwardly beyond said sleeve.

3. The combination of claim 2 including means securing said ring to said sleeve against axial movement relative thereto.

4. The combination of claim 3 wherein the last mentioned means comprises a circumferentially extending and outwardly opening groove formed in said sleeve and seatingly receiving said ring.

5. The combination of claim 4 wherein said ring is formed of fibrous material.

6. The combination of claim 1 wherein said projectile comprises a cylindrical member and said bore cleaning means is disposed exteriorly of said cylindrical member.

7. The combination of claim 1 wherein said projectile comprises a cylindrical member and said bore cleaning means comprises a sleeve in which said projectile is slidably received, said sleeve being radially expandible, an expansion ring disposed between said cylindrical member and said sleeve yieldingly urging the latter toward a radially expanded position so as to be adapted to frictionally engage the inner surfaces of said barrel after said sleeve is withdrawn from said case.

8. The combination of claim 1 wherein said pull member is constructed of a material having elastomeric properties.

9. The combination of claim 1 wherein said projectile comprises a cylindrical member and said bore cleaning means comprises a sleeve disposed exteriorly of said cylindrical member, said sleeve being split along a spiral path extending from one end thereof to the other.

10. A cleaning shell for gun barrels, said cleaning shell comprising a case containing propellant means including an actuator adapted to be actuated from the exterior of a barrel in which cleaning barrel is disposed, a projectile in said case, said case and projectile including coacting means yieldably retaining said projectile in said case, said projectile, upon actuation of said propellant means, being dischargeable from said case and adapted to pass through said barrel, bore cleaning means in said case adapted to be moved through said barrel and to engage and clean the internal surfaces of said barrel upon movement of said cleaning means therethrough, said case and bore cleaning means including coacting means operable to yieldingly retain said bore cleaning means in said case prior to, during and after actuation of said propellant means and resultant discharge of said projectile through said barrel, an elongated flexible pull member connecting said bore cleaning means to said projectile, said propellant means being sufficient only to overcome the first mentioned coacting means and to discharge said projectile outwardly of said casing with sufficient momentum to carry it through an associated barrel in which it is loosely received and inoperative to discharge said projectile outwardly of said case with sufficient momentum to overcome the second mentioned coacting means and to pull said bore cleaning means out of said case, said projectile comprising a cylindrical member and said bore cleaning means comprising a sleeve in which said projectile is slidingly received and defining two radially outwardly opening grooves extending circumferentially thereabout, and a pair of cleaning rings seated in said grooves and extending radially outwardly of said sleeve.

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11. The combination of claim 10 wherein said two grooves are disposed adjacent opposite ends of and spaced longitudinally of said sleeve.

12. A cleaning shell for gun barrels, said cleaning shell comprising a case containing propellant means including an actuator adapted to be actuated from the exterior of the barrel to which said cleaning shell is disposed, a projectile in said case and dischargeable therefrom and adapted to pass through said barrel upon actuation of said propellant means, said projectile having bore cleaning means connected thereto adapted to engage and clean the internal surfaces of said barrel upon movement of said cleaning means therethrough, said projectile comprising a cylindrical member and said bore cleaning means are disposed exteriorly of said cylindrical member, said bore cleaning means comprising a radially expansible sleeve in which said projectile is telescopingly received, an expansion ring disposed between said cylindrical member and said sleeve yieldingly urging the latter toward a radially expanded position so as to be adapted to frictionally engage the inner surfaces of said barrel after said sleeve is withdrawn from said case, said case including means for retaining said sleeve within said case during ejection

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of said cylindrical member therefrom, said cylindrical member including elongated flexible means tethering said cylindrical member to said sleeve whereby after said cylindrical member is ejected from said barrel said tethering member may be pulled to pull said sleeve from within said shell and outwardly of said barrel, said tethering member including a V-shaped bridle secured at its free ends to diametrically opposite portions of said sleeve and at its apex to the adjacent end of the remainder of said tethering member.

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