

[54] FIREARM SEALING DEVICE

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[51] Int. Cl.F41c 27/08

[58] Field of Search42/1 N

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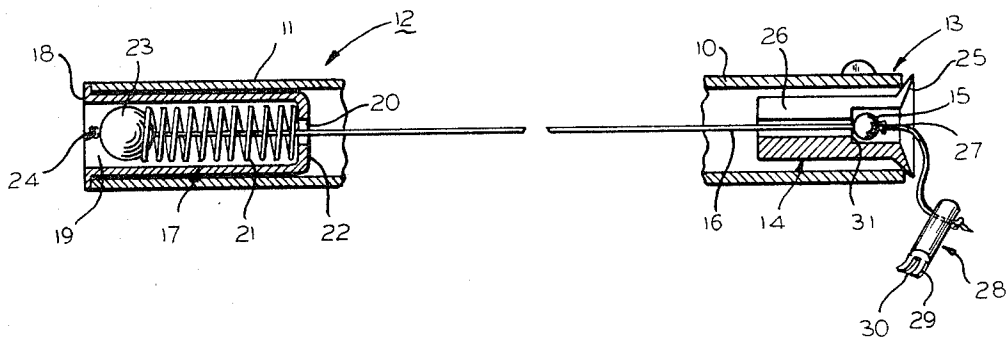
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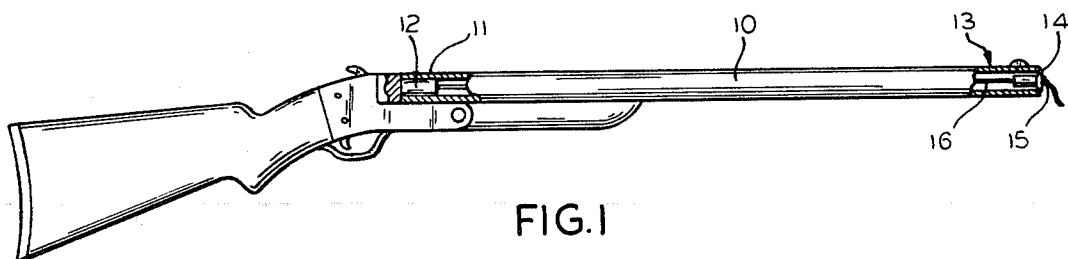
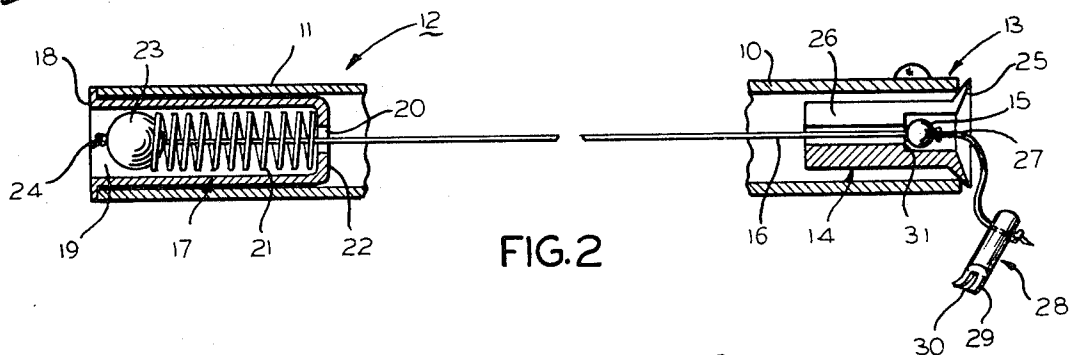
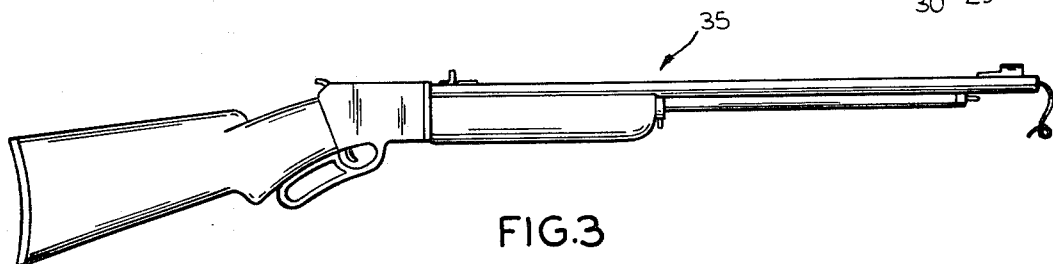
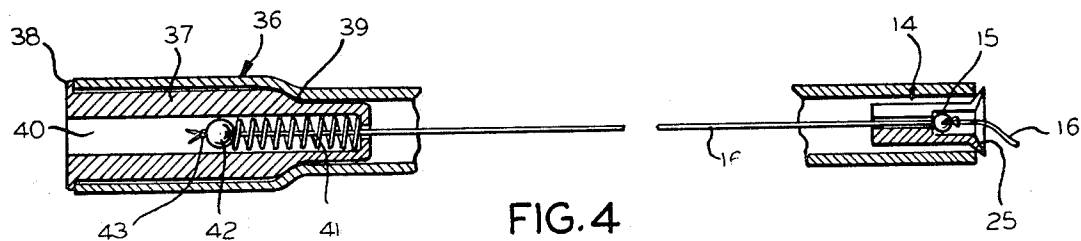
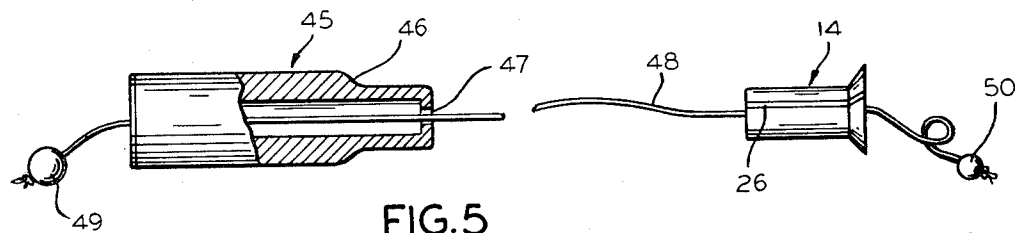
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[57] ABSTRACT

A firearm is protected against unauthorized use and contamination with a kit that comprises an element which is resiliently biased into the chamber end of a gun barrel and which may engage with and retain a sealing element at the muzzle end of the barrel. A special key and particular knowledge are required for removal of the device from the firearm.

7 Claims, 8 Drawing Figures





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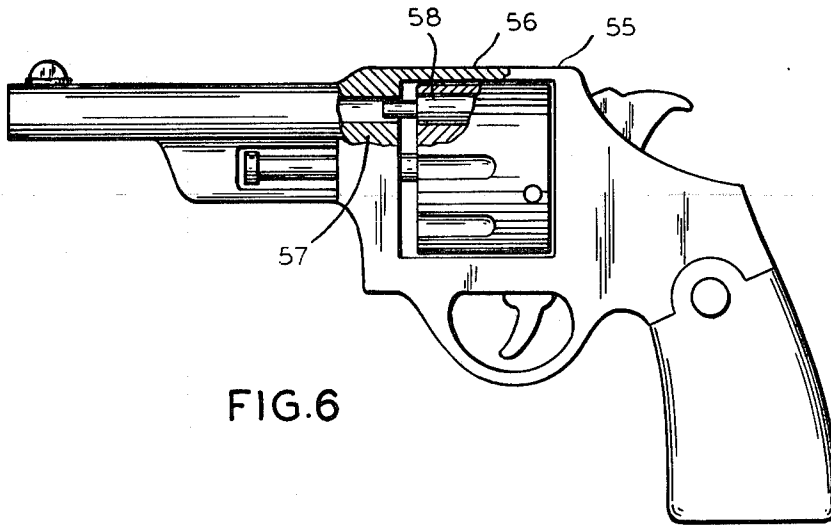


FIG. 6

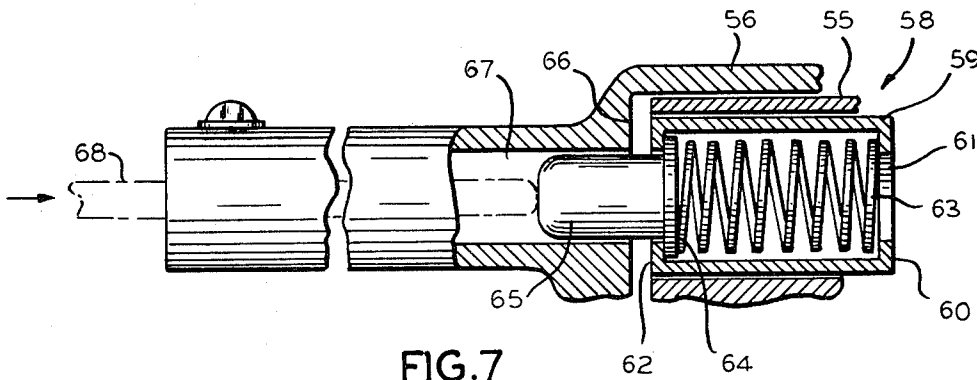


FIG. 7

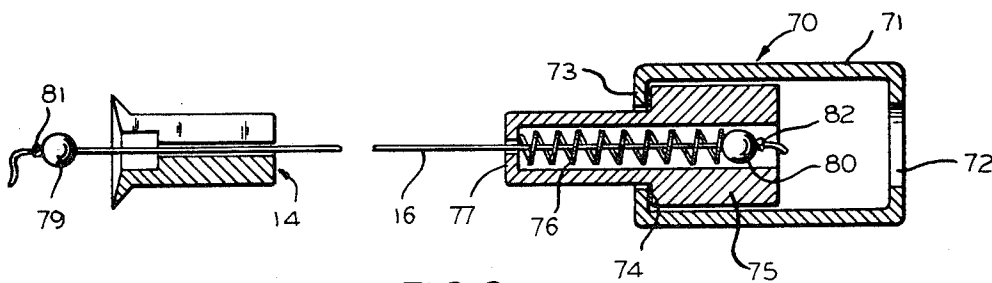


FIG. 8

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FIREARM SEALING DEVICE

BACKGROUND OF THE INVENTION

Several different methods for sealing firearms such as pistols, shotguns, and rifles have been proposed. Prior devices of this type sometimes comprise a rod which extends through the barrel of the firearm and a pair of retainers which are engaged by the ends of the rod in the cartridge chamber and muzzle, respectively. Some prior firearm sealing devices have the rod constrained against withdrawal at the chamber end of the barrel and have a key or combination lock engaging the rod at the muzzle end of the barrel. Others require a special tool for unscrewing the rod retaining means at the muzzle end so that the rod can be withdrawn and the firearm put into use. Most of these devices are sufficiently costly and complicated to discourage their purchase and use and they are not adaptable to firearms of different kinds and sizes. Moreover, where a variety of firearms of different sizes must be sealed and unsealed periodically as is the case in merchandising establishments, it is necessary to store the rods when they are not in use and to have a wide variety of them on hand to meet requirements. Rods, of course, cannot be stored compactly because of their rigidity and if they were made to be foldable, they would just become more complex and costly in which case sealing of firearms in required cases would be discouraged. Rods and other elements used in prior sealing devices prevent a prospective customer from trying the action of a firearm to see if it works and has the feel that he requires.

In general terms, the firearm sealing device herein disclosed comprises a sleeve which is inserted into the chamber end of the barrel and which has a coacting element that may be spring-biased into the barrel. A flexible element such as a cord extends from the sleeve through the barrel to the muzzle end where a retainer may be fastened so as to tension the cord with the spring or other biasing element. The muzzle end retainer may be a ball which recesses sufficiently so that a special key is required to remove it in preparation for inactivation of the sealing device. A stop or ferrule is inserted in the muzzle end. The ferrule is recessed so as to act as a seat for the ball.

A general object of this invention is to provide a device for sealing a firearm against unauthorized use and against contamination of the barrel interior when the firearm is in storage.

Another object is to provide a sealing device which permits working the action of a firearm with assurance that it is not loaded and cannot be loaded quickly.

Other objects are to provide a firearm sealing device which may be acquired in the form of a kit which is compact, inexpensive, easy to store and use and is inconspicuous but effective for its intended purpose.

How the foregoing and other more specific objects of the invention are achieved will appear from time to time throughout the course of the ensuing description of embodiments of the invention taken in conjunction with the drawings.

DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a typical shotgun with its muzzle and breech ends partially broken away to show installation of components of the new sealing device;

FIG. 2 is an isolated view of the sealing device which is installed in the firearm of FIG. 1;

FIG. 3 depicts a rifle in which the sealing device is installed;

FIGS. 4 and 5 show sectional views of alternative embodiments of a rifle sealing device;

FIG. 6 depicts a pistol with a part broken away to show installation of a sealing device in the chamber and cylinder thereof;

FIG. 7 is an enlarged contracted view of a pistol barrel and cylinder assembly, partially in section and partially broken away to show an installed sealing device; and

FIG. 8 is an isolated cross sectional view of the elements of an alternative form of pistol sealing device.

DESCRIPTION OF A PREFERRED EMBODIMENT

FIG. 1 illustrates a shotgun comprising a barrel 10. The breech 11 or barrel end is broken away to illustrate how the new sealing device assembly 12 may be inserted therein. The muzzle end assembly 13 is in a broken away part of the muzzle. This assembly includes a ball stop or ferrule 14 in which there is a ball retainer 15. A cord 16 extends through the bore of the barrel from the muzzle end to the breech end and ties the breech insert 12 and the muzzle insert 13 together.

Details of the components for sealing the firearm shown in FIG. 1 against contamination of its bore and unauthorized use are depicted in FIG. 2. In this figure, what is normally the cartridge receiving chamber end 11 of barrel 10 is occupied by a hollow cylindrical sleeve 17 constituting a chamber insert. This sleeve may be metal or plastic and may be formed with an integral rim or flange 18 which serves to stop sleeve 17 from sliding through the interior of barrel 10. An end of sleeve 17 has a hole 20 through which cord 16 extends inside of the barrel and toward its muzzle end. The bore 19 of sleeve 17 is occupied by a longitudinally disposed compressible coil spring 21. The coil spring is captured between end wall 22 and a ball 23 which has a central hole so that cord 16 may pass through it. The ball 23 is retained on cord 16 by tying a knot such as 24 or by any other suitable means.

The muzzle end assembly 13 includes the ferrule which is designated generally by the numeral 14. This ferrule has its end 25 flared to prevent the ferrule from being drawn into the gun barrel when cord 16 is under tension. The ferrule is essentially a hollow cylinder having a slot 26 which extends over the full length of the ferrule. This slot permits passing cord 16 sidewise through the wall of the ferrule. The recess 31 of the flared end 25 of the ferrule acts as a seat for a ball 15 or other suitably shaped retainer to which cord 16 is attached. The ball is retained on cord 16 with a knot 27 or by other suitable means. Attached to the free end of cord 16 beyond knot 27 is a ball removing key which is generally designated 28 and has a cylindrical body and a pair of curved prongs 29 which are separated by a slot 30. The inside curvature of prongs 29 approximates that of ball 15 and the total width of the fork is not so great as to prevent its entry into the ball recess 31 of ferrule 14. The cylindrical key 28 is of such size that it will pass through the bore of a small caliber firearm.

The manner in which the parts of the sealing device just described are used will now be described in further

reference to FIG. 2. Assembly begins with the parts that are depicted in the left section of FIG. 2 or the breech end of the firearm. First cord 16 is passed through hole 20 in the end of sleeve 17 and the cord is extended out of the back opening of the sleeve. Spring 21 is then slipped over the cord. The cord is then threaded through ball 23 and a knot 24 is tied in the cord. Ball 23 is larger in diameter than the interior of spring 21 in which case it will not pass through the spring but will react against one of its ends. Applying tension to cord 16 will result in compression of the spring under the influence of the ball. When the cord is engaged, the spring maintains the tension on the cord as is the case when installation of the device is completed.

Ball 15 which is used at the muzzle end of the barrel may be tied onto cord 16 at a point where the ball will be retracted inwardly of the muzzle end of the barrel about an inch if sleeve 17 were in the chamber and spring 21 were not compressed. When a knot 27 is tied to establish the position of the first ball 23, key 28 is then tied to the free end of cord 16. Since the key 28 and muzzle end ball 15 are sized to fit freely through the bore of barrel 10, these two elements may be fed into the chamber end of the barrel and allowed to drop through it until the key becomes accessible at the muzzle end. The key and the cord between it and knot 27 provides a means for gripping to place the cord under tension. Thus, when sleeve 17 is registered in chamber 11 as shown in FIG. 2, tension is applied to cord 16 so as to compress spring 21 and bring the ball 15 at the muzzle end out beyond the end of the barrel. The slotted stop ferrule 14 is then passed over the cord adjacent ball 15 by passing the cord through longitudinal ferrule slot 26. Ferrule 14 may then be allowed to slide into the barrel until its flared end 25 is stopped against the muzzle end as shown in FIG. 2. The cord may then be relieved of manual tension so that spring 21 can retract ball 15 into the flared opening 25 of the ferrule. The spring force thus keeps the cord 16 under tension and keeps ball 15 seated in the ferrule to exclude dirt from the barrel. Cord 16 is then cut adjacent knot 27 to liberate key 28 which may be kept in a safe place apart from the sealed firearm.

Key 28 may be used to unseal the firearm by passing its curved prongs 29 along the side of ball 15 in recess 31 of the ferrule 14 so that the space 30 between the prongs admits the cord at the back of the ball. Ball 15 may thus be pried out of ferrule 14 and the latter removed by using its side slot 26. Removal of the ferrule permits ball 15 to pass through the bore of the barrel 10 so that sleeve 17 and its associated parts may be withdrawn from the barrel to restore the firearm to usable condition.

FIG. 3 shows a rifle 35 in which the new sealing device may be used. The general use and construction of the rifle sealing device is similar to that which has heretofore been described except for some details which will be discussed in connection with FIG. 4. In this figure the ferrule which has a construction similar to that which was previously described is given the same reference numeral 14. The ball 15, cord 16 and the flared end 25 of the ferrule are also similarly marked. The components at the chamber or breech end 36 are, however, different in construction and will be identified accordingly.

In FIG. 4, the cross section of breech 36 exhibits a bore which is normally adapted to receive a similarly shaped shouldered cartridge. In this case, sleeve 37 has an outside configuration which is similar to that of a rifle cartridge. Sleeve 37 may be provided with a flanged rim 38 although this is not necessary in the case of a rifle because of the constriction at 39 which prevents the sleeve from being pulled into the barrel. Sleeve 37 has a relatively thick wall in this case and may be made of plastic or metal. It has a central bore 40 which is occupied by a coil spring 41 and a small retainer ball 42 which is secured by a knot 43 in the cord. As in the previous case, applying tension to cord 16 results in compression of spring 41. The manner of using the device shown in FIG. 4 is similar to the manner in which the device in FIG. 2 is used, so the description will not be repeated.

FIG. 5 shows an alternative embodiment of a gun sealing device which operates on the same principles as those previously described. The embodiment shown in this figure is particularly adapted for use in a rifle where the chamber sleeve 45 is constricted as at 46 to prevent the sleeve from being drawn into the gun barrel. At the end of sleeve 45 is a hole 47 through which a cord 48 passes. Cord 48, in this example, is elastic in which case the coil spring which is used in the other embodiments may be eliminated. In the FIG. 5 embodiment, there is a ball 49 fastened to the chamber end of elastic cord 48 and a ball 50 which is adapted to be fastened to the muzzle end of the cord. To install this embodiment of the device, sleeve 45 is positioned in the chamber while the gun barrel is pointed downwardly after having first admitted ball 50 into the barrel so that it, by force of gravity, will pull cord 48 through with it. The excess length of cord 48 beyond ball 50 may then be gripped by the fingers to stretch the cord and provide a space between the end of the gun barrel and the ball 50 for passing ferrule 14 over the cord by means of slot 26. A key such as 28 may again be used to retract ball 50 sufficiently to stretch the cord and permit removal of ferrule 14. Upon this event, sleeve 45 may be ejected from the chamber whereupon it may be gripped to pull cord 48 and ball 50 through the back end of the barrel.

FIG. 6 shows a revolver in which the new sealing device may be used. Part of the cylinder 55, frame 56 and barrel 57 are broken away to show how the sealing device which is marked generally with the numeral 58 is installed in the firearm.

Details of a piston sealing device in accordance with the invention are shown in FIG. 7. The device comprises a hollow cylindrical sleeve 59 which has an end wall 60 in which there may be a hole 61 if desired. The opposite end of sleeve 59 is open and has a radially inwardly directed flange or rim 62. Prior to forming this rim, a coil compression spring 63 is disposed coaxially within the sleeve 59. This spring butts against the cap 64 of a plunger 65 which is also installed before flange 62 is formed. Spring 63 urges plunger 65 out of sleeve 59. The tip of plunger 65 is preferably chamfered or rounded as shown for easier removal from the bore 67.

To use the device shown in FIG. 7, revolver cylinder 55 is swung out and the device 58 is inserted in the same manner in which a live cartridge would be inserted except that the fingers are used to depress plunger 65 in opposition to the force of spring 63. Then

the revolver cylinder 55 may be pivoted into its home position without interference by the plunger. As the cylinder 55 approaches alignment, plunger 65 may be released so its bears frictionally on face 66 at the back of the chamber. When cylinder 55 reaches home position plunger 65 will be propelled forward into the barrel 67 under the influence of compression spring 63. The cylinder is then locked and cannot be loaded with a live cartridge quickly or by someone who is uninformed as to the method of unlocking it.

The seal may be removed and the revolver reactivated by passing an elongated member 68, which may be a pencil for example, down barrel 67 so as to compress plunger 65 in opposition to the force of spring 63. Cylinder 55 may then be swung outwardly until it is clear of face 66 at the back of the cartridge chamber. The rounded tip on the plunger 65 reduces interference when it is swinging out. The sealing device 58 may then be withdrawn from the front end of revolver cylinder 55. The firearm is then in condition for normal operation.

FIG. 8 shows an alternative embodiment of a small firearm sealing device. This embodiment uses a longitudinally slotted, flared ferrule ball stop which is given the same reference numeral 14 as in the previous cases because of the structural similarity. This ferrule seats in the muzzle end of the barrel of the firearm as in the previous cases.

The assembly for insertion in the cylinder of a revolver or the breech of another type of hand gun such as one that side loads, or uses a clip, is generally marked 70 in FIG. 8. This assembly comprises a cylindrical sleeve 71 which may be of metal or plastic and has an open but inwardly flanged end 72. The opposite end is flanged as at 73 to establish a retaining shoulder for the shoulder 74 of a bored plunger 75. The bore of plunger 75 is occupied by a normally relaxed compression spring 76. The plunger bore terminates in a shoulder 77. The assembly is provided with a cord 16 as in the previous cases and there are balls 79 and 80 secured by knots 81 and 82, respectively, at opposite ends of the cord. The plunger 75 can slide back in sleeve 71 until the plunger is stopped by flange 72. At this time the face of shoulder 77 on the plunger will be flush with the face of shoulder 73 of the sleeve. This facilitates insertion of the assembly into certain types of chambers.

When the device shown in FIG. 8 is not installed, spring 76 is in a relaxed state as just explained and plunger 75 is retracted. Thus, plunger 75 will not interfere when the revolver cylinder is swung back into its home position when installing the sealing device shown in FIG. 8.

The device may be installed by passing ball 79 through the cartridge opening in cylinder 55, see FIG. 7, for example, which aligns with the bore of the barrel. This may be done when the cylinder is swung out because the relaxed state of the cord permits feeding the ball into the barrel. At this time plunger 75 is retracted. The cylinder is then swung closed and the free end of cord 16 beyond knot 81 is gripped so as to impose tension on cord 16 and withdraw ball 79 from the muzzle end of the barrel. This will cause the other ball 80 to compress spring 76 and causes it to urge plunger 75 into the chamber end of the barrel to

prevent rotation of the cylinder. When ball 79 is retracted from the muzzle end, slotted ferrule 14 may be passed over cord 16 and the ball may be released for seating within the flared end of the ferrule.

The sealing device shown in FIG. 8 may be removed from the firearm as in some of the previous embodiments by using a key 28 to retract ball 79 to thereby extend cord 16 so that ferrule 14 may be removed. Ball 79 is then free to slide back through the bore of the firearm. By tipping the firearm so that its breech end is below its muzzle end, plunger 75 will fall back in sleeve 71 so as to clear the plunger and permit swinging the cartridge cylinder outwardly. Sleeve 71 may then be ejected and the whole sealing assembly may be separated from the firearm, and stored for reuse.

In summary, a sealing device has been described for use with various types of firearms. The device is distinguished by having a ball which seats tightly to exclude contaminants from the barrel and to prevent unauthorized removal of those parts of the device which seal the firearm. The device may be installed easily by anyone who is provided with simple instructions but is difficult to remove in a hurry by anyone who is not properly instructed or who is not provided with a key for initiating disassembly of the sealing device. The simplicity of the device results in a cost which is sufficiently low to encourage purchase and use. Cost is reduced further by providing the parts of the device as a kit which may fit a variety of firearms and may be assembled easily by a purchaser. The parts are all small or flexible so that they may be merchandised or stored in a compact condition such as by keeping them in an envelope. No multiplicity of rigid rods which are tailored for individual firearm types must be kept in storage as was formerly the case with prior art types of firearm sealing devices. Generally, the action of the firearm can be tested though it is sealed.

Although embodiments of the invention has been described in considerable detail, such description is to be considered illustrative rather than limiting for the invention may be variously embodied and is to be limited only by interpretation of the claims which follow.

I claim:

1. A firearm sealing device comprising:

- a. a sleeve means insertable in one end of a firearm barrel and having an end opening presented to the interior of the barrel,
- b. cord means adapted to extend through the sleeve means, its opening and the barrel to the other end of the barrel,
- c. ferrule means insertable in said other end, said ferrule means having a portion sized to preclude its passage into the barrel,
- d. first retainer means engageable with said cord means inside of said sleeve means and second retainer means engageable with said cord means in the vicinity of said ferrule means, and
- e. means imparting a tensile force on said cord means for the retainer means to compress the sleeve and ferrule means into respectively opposite ends of the barrel to seal it.

2. The invention set forth in claim 1 including:

- a. spring means adapted to fit coaxially with and interiorly of said sleeve means for imparting the said tensile force on said cord means, said cord means

- restraining its associated retainer means against said spring means to compress it,
- b. said ferrule means having a longitudinal slot for passing the same over said cord means in the vicinity of the retainer means at said other end, 5
- c. said spring means acting through said cord means and retainer means to urge said sleeve means and said ferrule means toward each other.
3. The invention set forth in claim 1 wherein:
- a. said ferrule means has a flared external end and an internal seating recess for said retainer means, 10
- b. the said retainer means having a ball shape.
4. The invention set forth in claim 1 including:
- a. coil spring means coaxial with the interior of said sleeve means for reacting against said retainer means and imparting said tensile force to said cord means, 15
- b. plunger means having one end adapted to extend coaxially with and from said sleeve means and having flange means at its opposite end cooperating with said coil spring means. 20
5. The invention set forth in claim 1 wherein:
- a. said cord means is elastic and adapted to impart the said tensile force.
6. The invention set forth in claim 1 including: 25
- a. plunger means adapted to move inside of said sleeve means and to extend therefrom into the barrel of a firearm,
- b. spring means disposed in said plunger means for exerting a tensile force on said cord means by way 30

- of said retainer means,
- c. said cord means passing axially through said plunger means.
7. A firearm sealing device comprising:
- a. a flexible elastic cord adapted to pass through a firearm barrel and to be extended by and tensed by the application of a force at a place on the cord beyond an end of the barrel,
- b. first retainer means engageable with the elastic cord at one end of the barrel, said retainer means preventing withdrawal of the cord from the barrel when the cord is extended by application of a tensile force thereon,
- c. second retainer means engageable with said elastic cord at the other end of the barrel, and
- d. a ferrule adapted to be interposed between said second retainer means and an end of the barrel when the cord is extended elastically, said ferrule means having a longitudinal slot for passing said cord through it and having a flared end larger than the bore of the barrel to prevent withdrawal of the second retainer means into the barrel when the cord is released and in tension under its elastic influence,
- e. said second retainer means having a curved surface which is adapted to seat in said ferrule, whereby a curved key may be engaged with said curved surface to retract said second retainer means for removal of said ferrule means.

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