United States Patent [19]

Goodrich

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[54] **REMOVABLE SAFETY DEVICE FOR DISABLING FIREARMS**

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[52] **U.S. Cl.** .....**42/1 N**

[51] **Int. Cl.** **F41c 27/00,** F41c 27/08

[58] **Field of Search** .....42/1 N; 70/30, 49, 312

[56] **References Cited**

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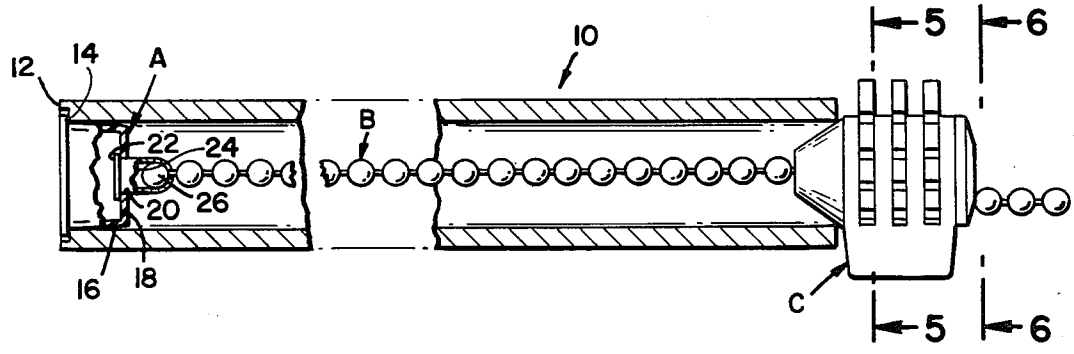
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Primary Examiner—Benjamin A. Borchelt
Assistant Examiner—C. T. Jordan
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[57] **ABSTRACT**

A universal safety device for preventing the loading of firearms, including a plug adapted to be secured to a bead chain and in frictional engagement with the chamber of the firearm, a bead chain for insertion through the barrel of the firearm and having a length in excess of the length thereof and a locking mechanism for engaging the bead chain at a location wherein the mechanism will block the end of the barrel.

6 Claims, 6 Drawing Figures



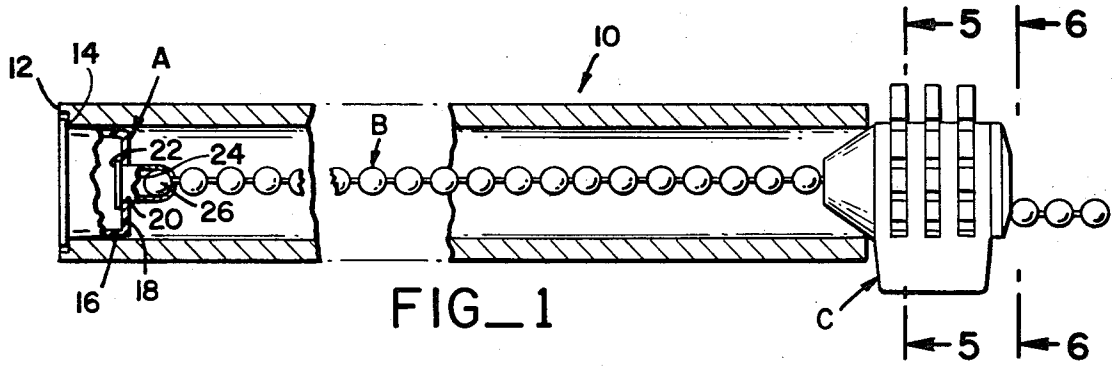


FIG_1

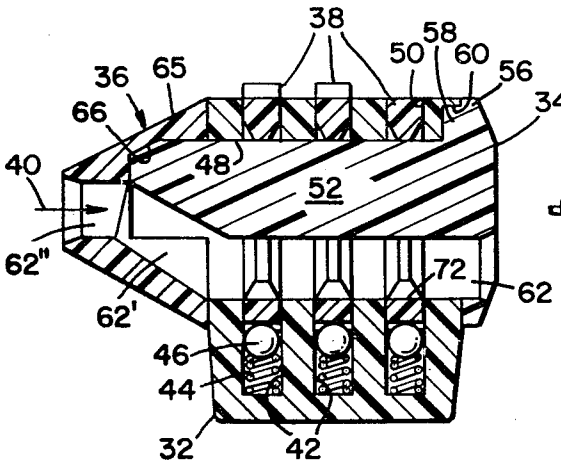


FIG_3

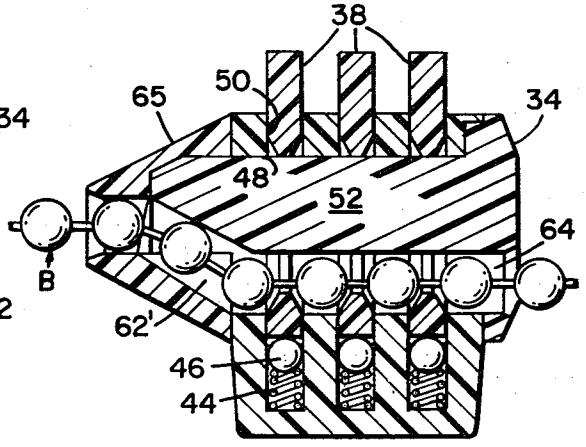


FIG_4

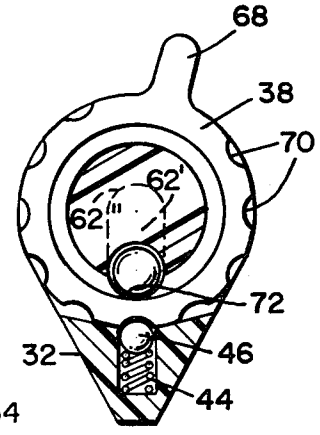


FIG_5

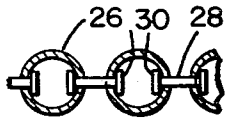


FIG_2

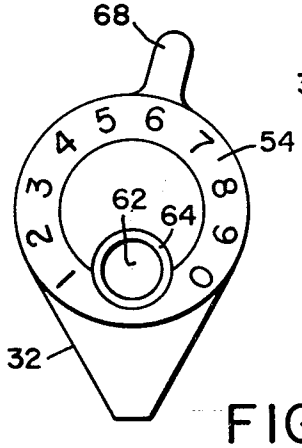


FIG_6

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REMOVABLE SAFETY DEVICE FOR DISABLING FIREARMS

This invention relates to a universal safety device that can be quickly modified to be used with all types of firearms such as rifles, various gauged shotguns, as well as pistols and automatics having a breech including a cartridge head recess.

Various devices have been developed for insertion through the chamber and into the barrel of a firearm to prevent the gun from being loaded by single shells or cartridges or the working of any of the various mechanisms which would bring a shell from the magazine to the chamber of an automatic firearm; see U.S. Pat. No. 3,137,957. Such prior art devices have at best suffered from the disadvantage of only being useful with one length of gun barrel and usually with no more than one cartridge head recess size. It is a primary object of this invention to provide a safety device that can be readily adapted to any length of firearm barrel or any size of cartridge head recess.

It is a further object of this invention to utilize a unique form of combination lock that greatly minimizes the possibility of removing the lock from a bead chain to which it is attached.

Other objects of this invention as well as features and advantages thereof will become more apparent from the following description and accompanying drawings, wherein:

FIG. 1 is a side elevational view of a phantom firearm showing the device of the instant invention positioned in the barrel thereof;

FIG. 2 is an expanded cross-sectional view of a portion of the bead chain;

FIG. 3 is an enlarged cutaway view of the combination lock of this invention arranged to receive the bead chain;

FIG. 4 is an enlarged cutaway view of the combination lock of this invention with the bead chain retained therein;

FIG. 5 is a cross-sectional view taken along the line 5—5 of FIG. 1; and

FIG. 6 is an end view of the combination lock taken along line 6—6 of FIG. 1.

Referring now to the drawings wherein similar characters of reference represent corresponding parts in each of the several views, the device of this invention is illustrated as being positioned in the barrel **10** and cartridge receiving chamber **12** of a firearm such as a conventional rifle (shown in phantom). The device consists of plug A, bead chain B and combination lock C. Plug A and lock C can be formed most readily of a hard plastic while bead chain B is most effectively formed of metal. Other materials will be apparent to one skilled in this art.

More specifically, plug A includes a peripheral shoulder **14**, tapered sleeve **16**, base **18** and recess **20** for engaging flange **22** of chain connecting member **24**. Chain connecting member **24** is in turn attached to one end of bead chain B by overlapping frictional engagement with outermost bead **26**. As shown in FIG. **2**, bead chain B comprises a plurality of beads **26** interconnected with links **28** having enlarged ends **30**, chain B being formed in a manner well known to those skilled in the art.

Combination lock C is formed of body **32**, pin **34**, nose segment **36** and tumbler rings **38** interconnected so as to provide a torturous bead chain defining path **40** of a cross-section sufficient for insertion of bead chain B therethrough as hereinafter described. As shown most clearly in FIGS. **3** and **4**, lock body **32** includes a series of parallel, spaced apart bores **42** within each of which is positioned a compression spring **44** and tumbler ratchet sphere **46**. Body **32** is also provided with a chamber **48** for receiving the aforementioned pin **34**. Also formed in body **32** are a series of parallel slots **50**, preferrably aligned with the aforementioned bores **42** for receiving tumbler rings **38**.

Pin **34** is formed of shaft **52** and a head portion **54** including a circumferential flange **56** provided with shoulder **58** for mating engagement with circumferential recess **60** in body **32**. When shaft **52** is inserted into body **32** it will be seen to extend beyond the width thereof. Extending through pin **34** and forming a part of torturous path **40** is elongated aperture **62** generally perpendicular to slots **50**. Aperture **62** extends for a length corresponding to the width of lock body **32**. Aperture **62'** is formed at an angle to aperture **62** in the portion of shaft **52** extending beyond body **32** to provide a further segment of path **40**.

Nose segment **36** is adapted to be secured to lock body **32** and the portion of shaft **52** extending beyond the end of body **32**. Nose segment **36** includes a central aperture **62''** and a further void **66** corresponding in configuration for mating engagement with the aforementioned extended portion of shaft **52**.

Referring now to FIG. **5**, the interrelationship of one of the tumbler rings **38** to the remainder of the components of combination lock C is illustrated in greater detail. Thus, tumbler ring **38** includes a plurality of notches **70** spaced about the outer periphery thereof. In addition, ring **38** contains a single semi-circular groove **72** formed at a location opposite one of the notches **70**. Notches **70** are arranged so as to interact with sphere **46** to lock ring **38** at various positions.

Combination lock **32** is assembled by first inserting each spring **44** into respective of bores **42** and thereafter positioning ratchet spheres **46** in bores **42** by depressing spring **44**. While maintaining spring **44** in a compressed position, tumbler ring **38** is inserted in slots **50** and pin **34** directed into chamber **48** of body **32**. Thereafter nose segment **36** is positioned over the end of shaft **52** and abutting body **32** so as to provide a continuous torturous path **40** formed of segments **62**, **62'** and **62''**. Components **32**, **34** and **36** can be retained in permanent engagement in any conventional manner such as gluing and the like. As will be seen with reference to FIG. **6**, the exposed surface of head **54** is provided with a series of indicia for use as hereinafter provided.

In operation, plug A is threaded onto the end of chain B having chain connecting member **24**. Chain B is then inserted into barrel **10** from cartridge recess **12**. Tumbler rings **38** are rotated by moving handles **68** so that each of the grooves **72** in respective of tumbler rings **38** is aligned with that portion of path **40** defined by aperture **62**. When this is accomplished, bead chain B is inserted along torturous path **40** commencing from aperture **62''** to **62'** and out of the end of aperture **62**. Bead chain B is drawn through combination lock C until tapered surface **65** is drawn into rigid engagement

with the end of barrel **10**, as plug A is caused to abut recess **12**. Tumbler rings **38** are then rotated by moving handles **68** so that grooves **72** are no longer aligned with opening **62**. In this manner, bead chain B is prevented from being removed from lock C. Furthermore, bead chain B can only be removed when grooves **72** are again all realigned with aperture **62**. As demonstrated in FIG. **6**, by providing **10** notches in each ring **38**, corresponding to the numerals **1–9** and **0**, and randomly forming each groove **72**, there are 1,000 possible combinations of alignment of grooves **72** with three tumbler rings **38**. Thus, without knowing the "combination," lock C can only be opened after considerable manipulation of handles **68**. Inclusion of further tumbler rings in the combination lock each expanding the possible combinations by a factor of **10**.

Plug A can be formed in a range of sizes to occupy various gauges and calibers of firearms. Furthermore, member **24** can correspond to the cartridge recess opening of a **22** caliber firearm so that it can in and of itself be employed as the plug. Tapered sleeve **16** is provided with a 1° slope to ensure a tight fit within recess **12**. Member **24** is provided with a similar slope for insertion into the cartridge recess of a **22** caliber firearm.

Although one embodiment of this invention has been described in detail, it will be apparent to those skilled in this art that the invention is only limited by the scope of the appended claims.

What is claimed is:

1. A safety device for firearms having a barrel with a breech and including a cartridge head recess, comprising in combination: a flexible bead chain having a length in excess of the length of said barrel; and inwardly tapering plug adapted to be removably secured at its smaller end to one end of said chain, a portion of said plug having a diameter greater than said cartridge head recess; and a tubular combination lock adapted to be releasably secured to said bead chain at a location intermediate the ends thereof by insertion of said chain through a tortuous path in said lock, whereby when said plug is secured to said one chain end and the other end of said chain introduced through said barrel, said lock can be secured to said chain at a location corresponding to the length of said barrel to prevent introduction of a cartridge into said head recess.

2. A safety device in accordance with claim **1** wherein said combination lock includes a rotatably positionable tumbler ring, said ring including a groove adapted to be aligned with said path by manipulation of said ring to allow said chain to be inserted through said lock.

3. A safety device in accordance with claim **2** wherein realignment of said groove out of said path prevents withdrawal of said chain form said lock.

4. A safety device in accordance with claim **2** and further characterized by means for retaining said tumbler ring at a plurality of positions wherein said groove is out of alignment with said path.

5. A safety device for firearms having a barrel with a breech and including a cartridge head recess, comprising in combination: a flexible bead chain having a length in excess of the length of said barrel; an inwardly tapering plug adapted to be removably secured at its smaller end to one end of said chain, a portion of said plug having a diameter greater than the diameter of said cartridge head recess; and a tubular combination lock adapted to be releasably secured to said bead chain at a location intermediate the ends thereof by insertion of said chain through a tortuous path in said lock, said combination lock including at least one rotatably positionable tumbler ring, compressed spring and sphere, said ring including a groove adapted to be aligned with said path by manipulation of said ring to allow said chain to be inserted through said lock, said ring also including a plurality of peripheral notches for retaining said tumbler ring at a corresponding plurality of positions wherein said groove is out of alignment with said path, said sphere adapted to be urged by expansion of said spring to occupy any one of said notches to temporarily retain said ring with respect to said path, whereby when said plug is secured to said one chain end and the other end of said chain end introduced through said barrel, said lock can be secured to said chain at a location corresponding to the length of said barrel to prevent introduction of a cartridge into said head recess.

6. A safety device in accordance with claim **5** wherein said lock includes a plurality of said rings.

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