May 14, 1963 D. E. McKINLAY 3,089,272

LOCKING TYPE SAFETY BREECH PLUG FOR FIREARMS

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Fig. 1

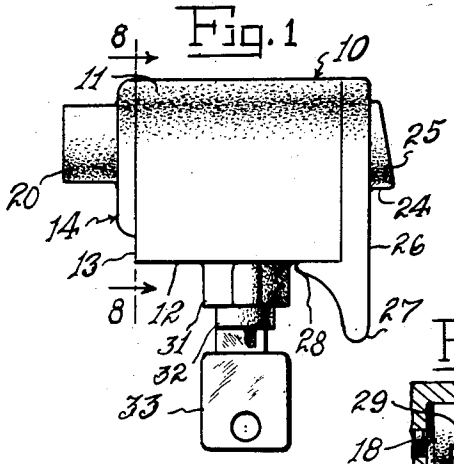



Fig. 4

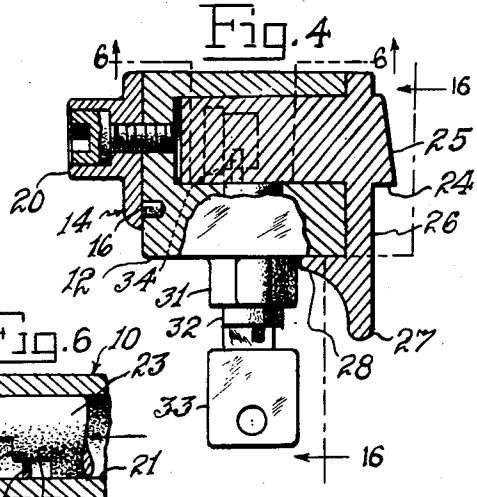



Fig. 6




Fig. 2

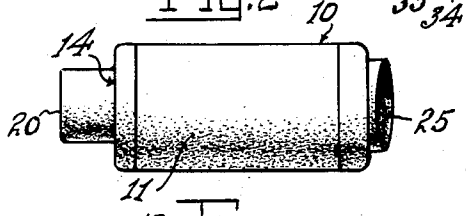



Fig. 5

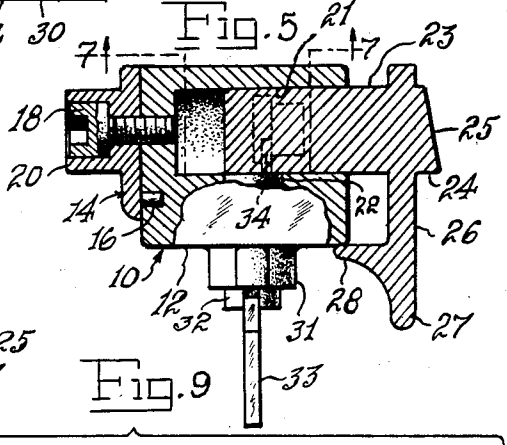



Fig. 3

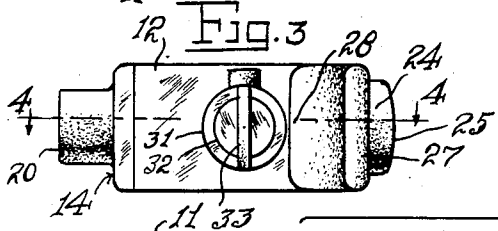



Fig. 9

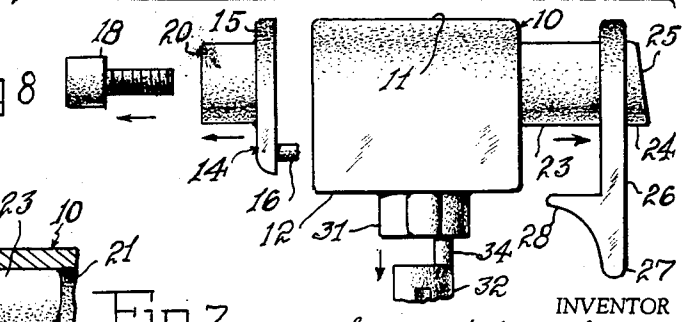



Fig. 8

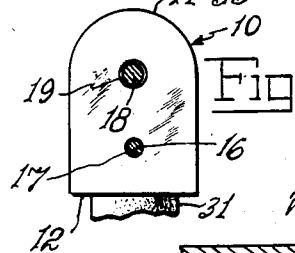
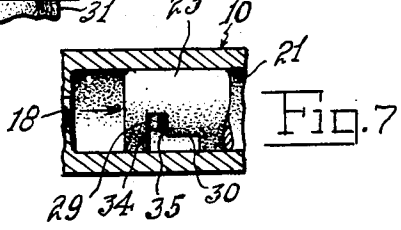



Fig. 7




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LOCKING TYPE SAFETY BREECH PLUG FOR FIREARMS

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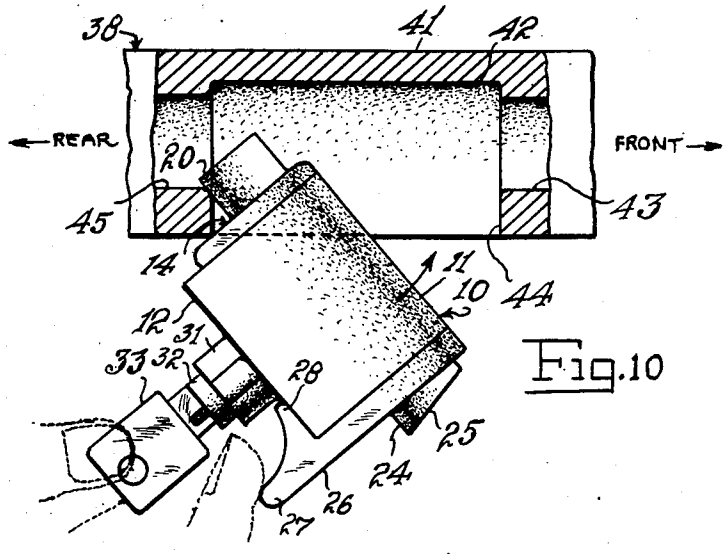



Fig.10

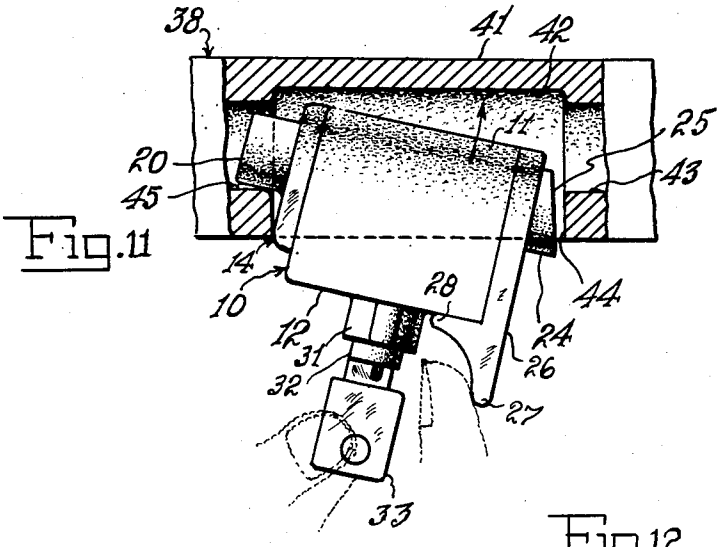
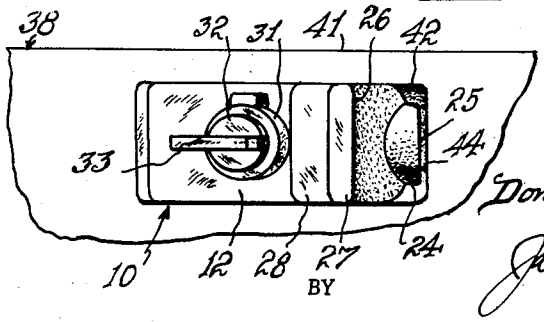



Fig.11

Fig.12




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LOCKING TYPE SAFETY BREECH PLUG FOR FIREARMS

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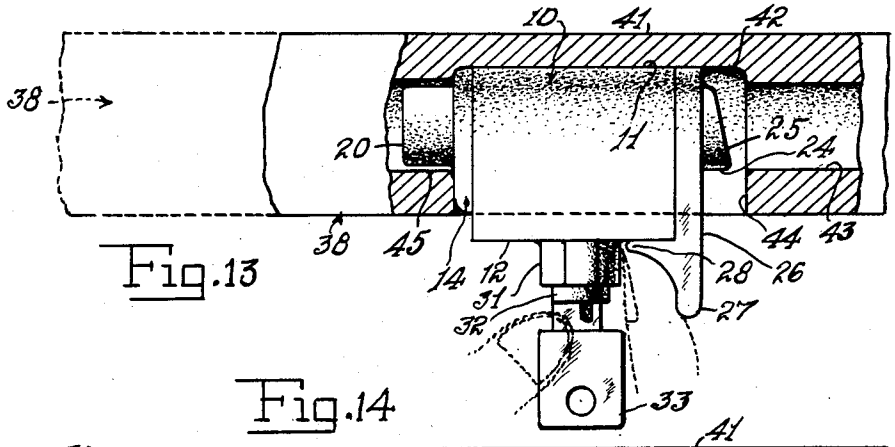



Fig. 13

Fig. 14

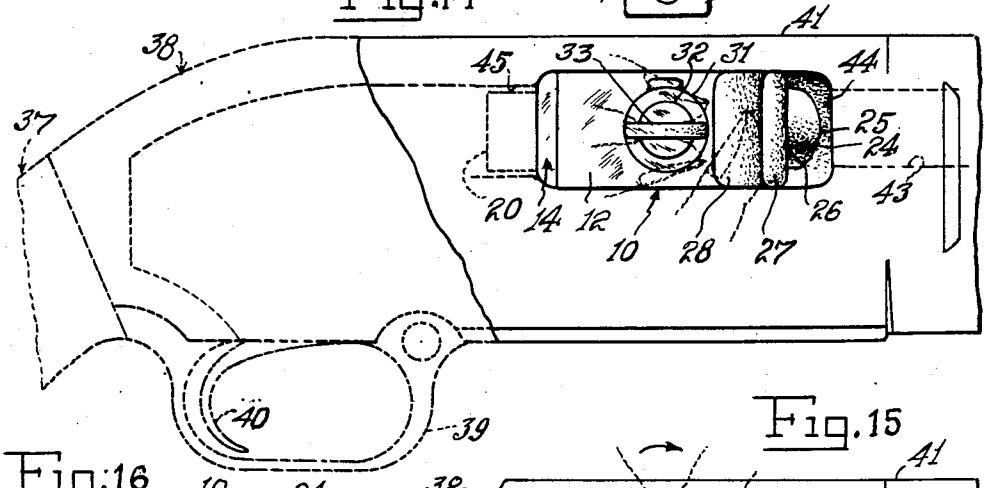
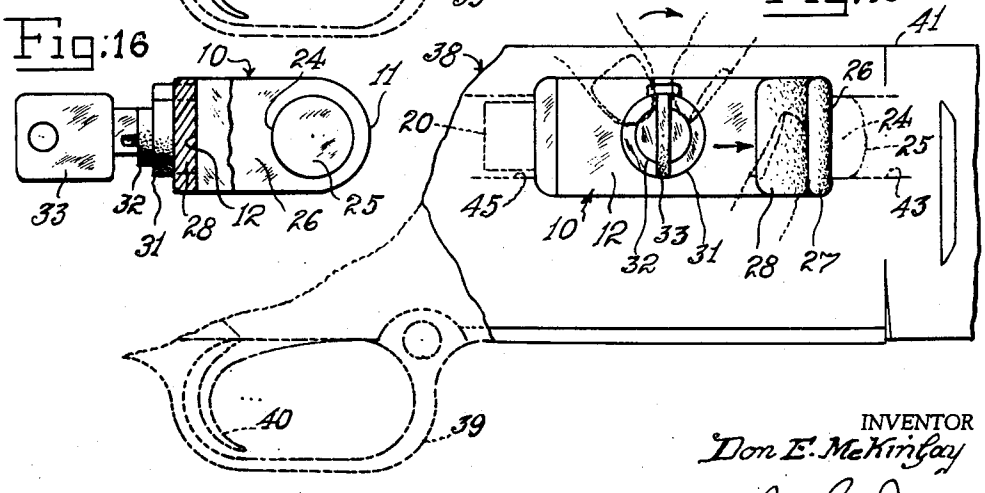



Fig. 15

Fig. 16




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# 3,089,272
# LOCKING TYPE SAFETY BREECH PLUG FOR FIREARMS

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Filed July 31, 1961, Ser. No. 128,935
9 Claims. (Cl. 42—1)

This invention relates to firearms and more particularly to a safety locking type breech plug which may be installed in a firearm to prevent unauthorized use thereof and the consequent possibilities of accidents.

As is well known, accidents frequently occur with firearms in the home or other places where firearms may be kept and sometimes such accidents are due to the fact that the firearm is handled by some one not familiar therewith or authorized to use the same, such as, children, and the like, and even though due precautions may be taken, such as storage of the firearm with the bolt retracted or with the safety lock in on position, nevertheless the firearm may be manipulated in a manner to discharge the same if loaded, or if desired, the same may be loaded and discharged. Accordingly, a device which will prevent loading of a firearm or actuation thereof in a manner to discharge the same without necessitating modification of the firearm or difficulty in use of the device would provide a very worthwhile safety feature for use in connection with firearms and would also serve as a means to prevent the use of firearms by other than the owner or other authorized persons.

It is accordingly an object of the invention to provide a safety breech plug for firearms which may be conveniently and economically manufactured from readily available materials and applied to a conventional firearm without modification thereof.

A further object of the invention is the provision of a safety breech plug for firearms provided with removable or replaceable adapter means to permit use of the same with firearms of different types, caliber or gauge.

A still further object of the invention is the provision of a safety breech plug for firearms which may be inserted into the receiver of the firearm through the shell ejection opening and lock therein by means of a key type or combination type lock.

Another object of the invention is the provision of a safety breech plug for fire arms which may be inserted into the receiver of the firearm and locked therein and when in place prevent loading of the firearm or operation thereof in a manner to discharge the same.

A further object of the invention is the provision of a safety breech plug for firearms which may be inserted into the receiver of the firearm through the shell ejection opening and lock therein and which requires no modification of the firearm and which will not disfigure or in any way impair the use of the firearm when the breech plug is removed.

A still further object of the invention is the provision of a safety breech plug for firearms which may be inserted into the receiver of the firearm through the shell ejection opening and including means to completely close such opening when installed therein to prevent entry of foreign matter.

Further objects and advantages of the invention will be apparent from the following description, taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a top plan view of a safety breech plug for firearms constructed in accordance with this invention and showing the plug in retracted condition;

FIGURE 2 is a rear elevational view of the breech plug shown in FIGURE 1;

FIGURE 3 is a front elevational view of the breech plug shown in FIGURE 1;



FIGURE 4 is a transverse sectional view, taken substantially on the line 4—4 of FIGURE 3, and showing the breech plug in retracted position;

FIGURE 5 is a section view similar to FIGURE 4, but showing the breech plug in extended position;

FIGURE 6 is a fragmentary sectional view, taken substantially on the line 6—6 of FIGURE 4, and showing the position of the locking lug with the plug in retracted position;

FIGURE 7 is a fragmentary sectional view, taken substantially on the line 7—7 of FIGURE 5, and showing the position of the locking lug with the plug in extended position;

FIGURE 8 is a fragmentary sectional view, taken substantially on the line 8—8 of FIGURE 1;

FIGURE 9 is an exploded top plan view showing the various elements of the breech plug of this invention;

FIGURE 10 is a view showing the receiver of a firearm and with the breech plug of this invention in position preparatory to insertion of the same to the receiver;

FIGURE 11 is a view similar to FIGURE 10, but with the breech plug of this invention partially inserted into the receiver;

FIGURE 12 is a side elevational of the receiver portion of a firearm with the breech plug of this invention inserted in the receiver in retracted and unlocked condition;

FIGURE 13 is a fragmentary top plan view with parts broken away and in section to show the receiver portion of a firearm with the breech plug of this invention inserted in the receiver and prior to extension of the plug to engage a portion of the same in the chamber of the firearm;

FIGURE 14 is a side elevational view of a portion of the firearm and showing the breech plug of this invention in the position shown in FIGURE 13;

FIGURE 15 is a view similar to FIGURE 14 with the breech plug of this invention extended and in locked condition; and

FIGURE 16 is a sectional view, taken substantially on the line 16—16 of FIGURE 4.

With continued reference to the drawings, there is shown a safety breech plug for firearms constructed in accordance with this invention, which plug may well comprise an elongated body **10** generally rectangular in cross section, but having a curved or arcuate sidewall **11** and an opposite flat sidewall **12**. The body **10** is also of a size to be inserted into the receiver of a firearm through the shell ejection opening in a manner to be later described. Removably secured to the rear end **13** of the body **10** is an adapter block **14** which may be provided with a relatively large flange **15** of the same configuration as the cross section of the body **10** and the flange **15** may abut the rear end **13** of the body **10** and be provided with a locating pin **16** to be received in an aperture **17** in the end **13** of the body **10**. The adapter block **14** may be removably secured by suitable threaded fastening means **18** extending through the block **14** and into a threaded aperture **19** in the end **13** of the body **10**. The block **14** is provided with a rearwardly extending cylindrical projection **20**, the purpose of which will be later described.

The body **10** is provided at the forward end with an axial bore **21** and with a transverse bore **22** intersecting the axial bore **21** and extending from the flat side face **12** of the body **10**. A plunger **23** is slidably received in the axial bore **21** and on the forward end of the plunger **23**, there is provided a nose portion **24** having a beveled front face **25**, the purpose of which will be later described. A transverse arm **26** extends from the plunger **23** at the rear end of the nose portion **24** and the arm **26** extends outwardly of the body **10** to provide a finger engaging portion

27 and also provided on the arm 26 is a rearwardly extending ear 28 overlapping the flat side surface 12 of the body 10 and the purpose of this ear 28 will also be later described.

As best shown in FIGURES 6 and 7, the plunger 23 is provided with a notch 29 adjacent the rear end and second notch 30 is also provided in the plunger 23, it being noted that the notch 30 is of greater width and less depth than the notch 29, as clearly shown in FIGURES 6 and 7. It is also to be noted that the notch 30 intersects the notch 29 and extends forwardly therefrom in the plunger 23.

A lock barrel 31 is fixed in the transverse bore 22 of the body 10 and rotatably mounted in the lock barrel 31 is a lock cylinder 32 provided with means to receive a key 33 for operation of the lock. While a key type lock is shown and described, it is to be understood that this is for illustrative purposes only and, if desired, a combination type lock may also be employed and the operation thereof in connection with the novel features of this invention will be the same as with a key type lock. A locking lug 34 is provided on the inner end of the lock cylinder 32 and the locking lug 34 projects into the axial bore 21 and, as shown in FIGURES 4 and 6, with the plunger 23 in retracted position, the locking lug 34 is received in the notch 30 of the plunger 23. As shown in FIGURES 5 and 7. with the plunger 23 in extended position, the locking lug 34 is received in the notch 29 and serves to lock the plunger 23 in extended position, since, as shown in FIGURE 7, the locking lug engages the forward wall 35 of the notch 29 and thereby prevents retraction of the plunger 23 until such time as the locking lug 34 is moved into the recess 30 of the plunger 23.

With particular reference to FIGURE 14, there is shown a portion of a typical firearm in which the forward end of the stock 37 is secured to the frame 38 of the firearm on which is mounted the usual trigger guard 39 housing the usual trigger 40. Formed as part of the frame 38 is a receiver 41, which, as best shown in FIGURE 13, is provided with a recess 42 for receiving a shell or cartridge from a magazine, not shown, and the receiver recess 42 opens into a chamber 43 formed as a part of the rear end of the barrel of the firearm. Also communicating with the receiver recess 42 is a shell ejection opening 44 through which discharged shells or cartridges are ejected. To the rear of the receiver recess 42 and communicating therewith is an opening 45 which receives the bolt or other firing mechanism of the firearm and the manner of utilizing the safety brech plug of this invention will now be described with particular reference to FIGURES 10 to 15, inclusive.

When it is desired to install the safety breech plug of this invention in a firearm to prevent unauthorized use thereof, the key 33 is operated in such a manner as to dispose the locking lug 34 in the recess 30 to permit retraction of the plunger 23, arm 26 and nose portion 24 to the position shown in FIGURES 4 and 6 and in this condition, the breech plug is positioned, as shown in FIGURE 10, with the rear end of the breech plug inserted through the shell ejection opening 44 partially into the receiver recess 42 and with the cylindrical projection on the rear of the plug body 10 partially inserted in the opening 45 in the rear end of the receiver 41. The breech plug is moved in the direction of the barrel in FIGURE 10 to insert the same within the receiver recess 42 and, as best shown in FIGURE 11, the beveled forward end 25 of the nose portion 24 provides sufficient clearance for the nose portion 24 to move inwardly by the front wall of the receiver recess 42, the breech plug coming to rest in a position within the receiver recess 42, as best shown in FIGURE 13. At this time, the finger engaging portion 27 of the arm 26 is grasped by the fingers of the user, as shown in FIGURES 6 and 14, and the plunger 23, as well as the arm 26 and nose portion 24 is moved forwardly to the position shown in FIGURE 15. At this time, the nose portion 24 enters the chamber 43 and disengagement of the nose portion 24 with the chamber 43, together with the engagement of the cylindrical projection 20 on the rear end of the body 10 of the breech plug engaging the opening 45, securely fixes the brech plug within the recess 42 of the receiver 41. In order to prevent unauthorized use of the breech plug of this invention from the firearm, the key 33 is now actuated to position the locking lug 34 within the recess 29 in the plunger 23, as shown in FIGURES 5 and 7, which will operate to prevent retraction of the plunger 23 and nose portion 24 and in this position, the key 33 may be removed which, of course, will prevent rotation of the locked cylinder 32 until such time as the key 33 is inserted therein and the cylinder 32 rotated to move the locking lug 34 out of the notch 29 and into the notch 30 thereby permitting retraction of the plunger 23 and nose portion 24 to permit removal of the breech plug from the receiver recess 42. It will also be noted that, as shown in FIGURE 15, with the plunger 23 extended to engage the nose portion 24 in a chamber 43 that the rearwardly extending ear 28 on the arm 26 overlapping the flat side surface 12 of the body 10 of the breech plug serve to completely close the shell ejection opening 44 which will operate to prevent entrance of foreign material, thereby protecting the firearm mechanism.

In order to remove the breech plug of this invention from the firearm to permit normal use thereof, the operation above described is repeated in reverse, the key 33 being inserted and rotated to dispose the locking lug 34 in the recess 30 of the plunger 23 thereby permitting retraction of the plunger 23 and removal of the nose portion 24 from the chamber 43 by grasping the finger engaging portion 27 of the arm 26 and thereafter the breech plug may be moved outwardly of the receiver recess 42 in the same arcuate path followed during insertion thereof, thereby permitting complete removal of the breech plug from the receiver recess 42 and permitting normal operation of the firearm.

It will be seen that by the above described invention there has been provided a relatively simple, yet highly effective safety breech plug for firearms which may be adapted to various types, calibers or gauges of firearms by replacing the adapter block 14 with another block suitable to the fierarm to be used and, furthermore, the breech plug of this invention may be securely locked in position in the firearm to prevent unauthorized use thereof, but conveniently removed when it is desired to utilize the firearm. No modification of the firearm is necessary and the use of the safety breech plug of this invention will in no way damage or impair normal use of the firearm.

It will be obvious to those skilled in the art that various changes may be made in the invention, without departing from the spirit and scope thereof and, therefore, the invention is not limited by that which is shown in the drawings and described in the specification, but only as indicated in the appended claims.

What is claimed is:

1. A locking type safety breech plug for firearms, said plug comprising an elongated body generally rectangular in cross section and of a size to be inserted into the receiver recess of a firearm through the shell ejection opening, an interchangeable adapter block removably secured to the rear end of said body, said block having a rearwardly extending cylindrical projection for insertion in an opening in the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body intersecting said axial bore, a plunger slidably received in said axial bore, a cylindrical nose portion on the forward end of said plunger for insertion into the chamber of a firearm, the forward end of said nose portion being beveled to facilitate insertion of said plug into the receiver recess, a transverse arm at the rear end of said nose portion extending outwardly of said body, a rearwardly extending ear on said arm overlapping said body, a notch in said plunger adjacent the rear end, a

second notch in said plunger of greater width and less depth than said first notch, said second notch intercepting and extending forwardly from said first notch, a lock barrel fixed in said transverse bore, a lock cylinder rotatably mounted in said barrel and a locking lug on the inner end of said cylinder, said lug being disposed in said first notch to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and said lug being disposed in said second notch to permit retraction of said plunger and removal of said body from the receiver recess.

2. A locking type safety breech plug for firearms, said plug comprising an elongated body of a size to be inserted into the receiver recess of a firearm through the shell ejection opening, an interchangeable adapter block removably secured to the rear end of said body, said block having a rearwardly extending projection for insertion in an opening at the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body intersecting said axial bore, a plunger slidably received in said axial bore, a nose portion on the forward end of said plunger for insertion into the chamber of a firearm, the forward end of said nose portion being beveled to facilitate insertion of said plug into the receiver recess, a transverse arm at the rear end of said nose portion extending outwardly of said body, a rearwardly extending ear on said arm overlapping said body, a notch in said plunger adjacent the rear end, a second notch in said plunger of greater width and less depth than said first notch, said second notch intersecting and extending forwardly from said first notch, a lock barrel fixed in said transverse bore, a lock cylinder rotatably mounted in said barrel and a locking lug on the inner end of said cylinder, said lug being disposed in said first notch to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and said lug being disposed in said second notch to permit retraction of said plunger and removal of said body from the receiver recess.

3. A locking type safety breech plug for firearms, said plug comprising an elongated body of a size to be inserted into the receiver recess of a firearm through the shell ejection opening, an interchangeable adapter block removably secured to the rear end of said body, said block having a rearwardly extending projection for insertion in an opening at the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body intersecting said axial bore, a plunger slidably received in said axial bore, a nose portion on the forward end of said plunger for insertion into the chamber of a firearm, the forward end of said nose portion being beveled to facilitate insertion of said plug into the receiver recess, a transverse arm at the rear end of said nose portion extending outwardly of said body, a rearwardly extending ear on said arm overlapping said body, a notch in said plunger adjacent the rear end, a second notch in said plunger of greater width and less depth than said first notch, said second notch intersecting and extending forwardly from said first notch, a lock mechanism in said transverse bore and a locking lug on the inner end of said lock mechanism, said lug being disposed in said first notch to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and said lug being disposed in said second notch to permit retraction of said plunger and removal of said body from the receiver recess.

4. A locking type safety breech plug for firearms, said plug comprising an elongated body of a size to be inserted into the receiver recess of a firearm through the shell ejection opening, a rearwardly extending projection on the rear end of said body for insertion in an opening at the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body



intersecting said axial bore, a plunger slidably received in said axial bore, a nose portion on the forward end of said plunger for insertion into the chamber of a fream, the forward end of said nose portion being beveled to facilitate insertion of said plug into the receiver recess, a transverse arm at the rear end of said nose portion extending outwardly of said body, a rearwardly extending ear on said arm overlapping said body, a notch in said plunger adjacent the rear end, a second notch in said plunger of greater width and less depth than said first notch, said second notch intersecting and extending forwardly from said first notch, a lock mechanism in said transverse bore and a locking lug on the inner end of said lock mechanism, said lug being disposed in said first notch to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and said lug being disposed in said second notch to permit retraction of said plunger and removal of said body from the receiving recess.

5. A locking type safety breech plug for firearms, said plug comprising an elongated body of a size to be inserted into the receiver recess of a firearm through the shell ejection opening, a rearwardly extending projection on the rear end of said body for insertion in an opening at the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body intersecting said axial bore, a plunger slidably received in said axial bore, a nose portion on the forward end of said plunger for insertion into the chamber of a firearm, a transverse arm at the rear end of said nose portion extending outwardly of said body, a rearwardly extending ear on said arm overlapping said body, a notch in said plunger adjacent the rear end, a second notch in said plunger of greater width and less depth than said first notch, said second notch intersecting and extending forwardly from said first notch, a lock mechanism in said transverse bore and a locking lug on the inner end of said lock mechanism, said lug being disposed in said first notch to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and said lug being disposed in said second notch to permit retraction of said plunger and removal of said body from the receiver recess.

6. A locking type safety breech plug for firearms, said plug comprising an elongated body of a size to be inserted into the receiver recess of the firearm through the shell ejection opening, a rearwardly extending projection on the rear end of said body for insertion in an opening at the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body intersecting said axial bore, a plunger slidably received in said axial bore, a nose portion on the forward end of said plunger for insertion into the chamber of a firearm, a transverse arm at the rear end of said nose portion extending outwardly of said body, a notch in said plunger adjacent the rear end, a second notch in said plunger of greater width and less depth than said first notch, said second notch intersecting and extending forwardly from said first notch, a lock mechanism in said transverse bore and a locking lug on the inner end of said lock mechanism, said lug being disposed in said first notch to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and said lug being disposed in said second notch to permit retraction of said plunger and removal of said body from the receiver recess.

7. A safety locking type breech plug for firearms, said plug comprising an elongated body of a size to be inserted into the receiver recess of a firearm through the shell ejection opening, a rearwardly extending projection on the rear end of said body for insertion in an opening at the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body intersecting said axial bore, a plunger slidably received in said axial bore, a nose portion on the forward end

of said plunger for insertion into the chamber of a firearm, a notch in said plunger adjacent the rear end, a second notch in said plunger of greater width and less depth than said first notch, said second notch intersecting and extending forwardly from said first notch, a lock mechanism in said transverse bore and a locking lug on the inner end of said lock mechanism, said lug being disposed in said first notch to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and said lug being disposed in said second notch to permit retraction of said plunger and removal of said body from the receiver recess.

8. A locking type safety breech plug for firearms, said plug comprising an elongated body of a size to be inserted into the receiver recess of a firearm through the shell ejection opening, a rearwardly extending projection on the rear end of said body for insertion in an opening at the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body intersecting said axial bore, a plunger slidably received in said axial bore, a nose portion on the forward end of said plunger for insertion into the chamber of a fream, a notch in said plunger adjacent the rear end, a second notch in said plunger forwardly of said first notch, a lock mechanism in said transverse bore and a locking lug on the inner end of said lock mechanism, said lug being



disposed in said first notch to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and said lug being disposed in said second notch to permit retraction of said plunger and removal of said body from the receiver recess.

9. A locking type safety breech plug for firearms, said plug comprising an elongated body of a size to be inserted into the receiver recess of a firearm through the shell ejection opening, a rearwardly extending projection on the rear end of said body for insertion in an opening at the rear end of the receiver recess, an axial bore in said body at the forward end, a transverse bore in said body intersecting said axial bore, a plunger slidably received in said axial bore, a nose portion on the forward end of said plunger for insertion into the chamber of a firearm and a lock mechanism in said transverse bore engaging said plunger and operable to lock said plunger in extended position with said body in the receiver recess and said nose portion in the chamber of the firearm and operable to permit retraction of said plunger and removal of said body from the receiver recess.

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