Feb. 1, 1938. C. C. GUTHRIE 2,107,034

CONVERTER CARTRIDGE

Filed March 6, 1936

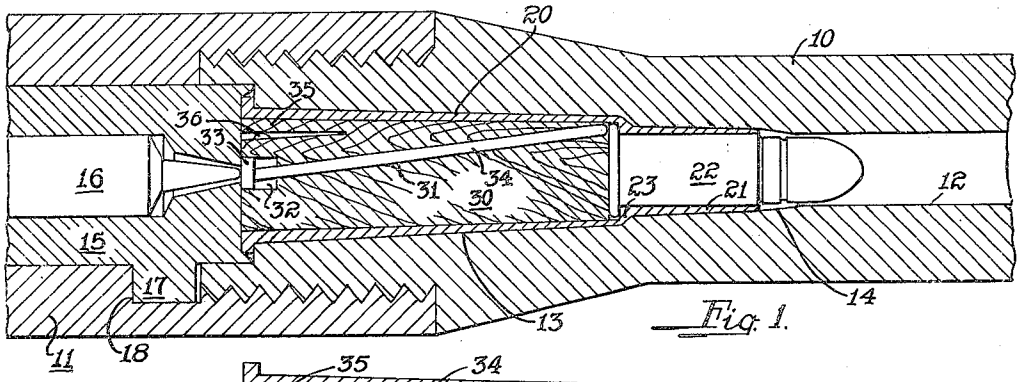


Fig. 1.

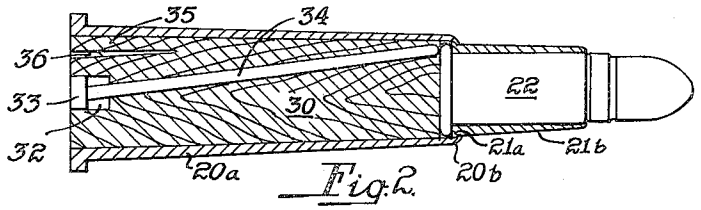


Fig. 2.

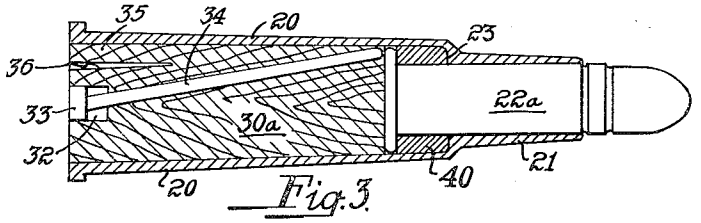


Fig. 3.

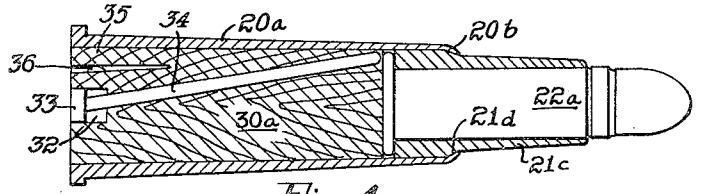


Fig. 4.

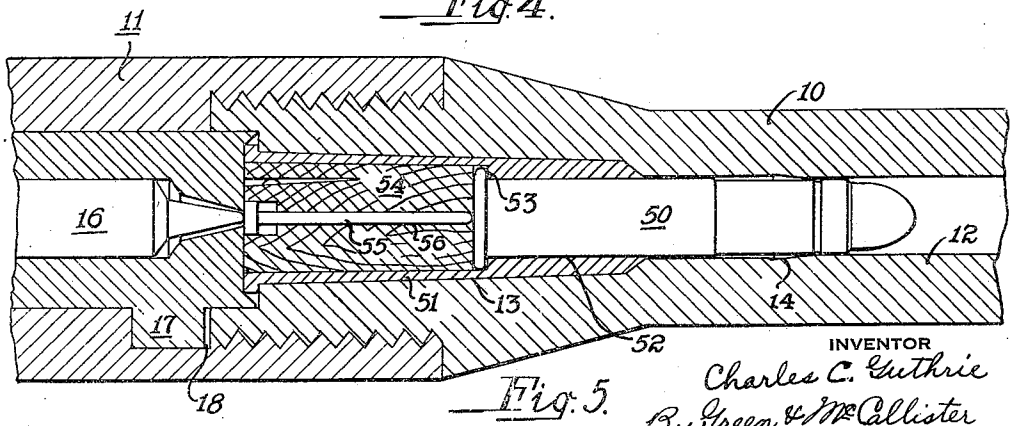


Fig. 5.

INVENTOR

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UNITED STATES PATENT OFFICE

2,107,034

CONVERTER CARTRIDGE

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Application March 6, 1936, Serial No. 67,453

2 Claims. (Cl. 102—14)

This invention relates to converter cartridges for high power long range rifles and the like, and more particularly to an improved device for converting guns chambered for high power bottle necked cartridges into low power rifles of medium range suitable for target work and small or medium game.

The primary object of my invention is to provide a safe, simple, and inexpensive device which is harmless to the gun for permitting low power rim or center fire cartridges such as .32 caliber shorts or longs to be readily fired in a gun, such as a .30—.40 caliber high power rifle, chambered to receive center fire high power bottle neck cartridges.

Another object of this invention is to provide a device for carrying such sub-powered cartridges which may be worked through the magazine of a high power rifle chambered to receive a bottle neck cartridge and which seats the bullet in the throat or rifling of the barrel in the same manner as the bullet is seated when the rifle is being used with ammunition designed for such rifle.

Another object of this invention is to provide a device for converting a high power rifle into a low power rifle, that will not injure the rifling of the barrel since the bullet is seated in the bullet chamber or rifling of the barrel, and will prevent any back flare and subsequent fouling of the breech mechanism.

A further object is to provide a device for changing a high power rifle into a rifle using low power cartridges which will transmit back thrust of the explosion directly and without lost motion to the gun breech.

A further object is to provide a device whereby low power cartridges may be fired in a rifle chambered to receive a high power bottle neck cartridge in which the low power cartridge positioned in the chamber is entirely sealed in, and the cartridge case completely supported with the result that the danger of rupture of an unsupported cartridge case with the possibility of back flare is entirely eliminated.

A still further object is to provide a device for converting a high power rifle into a low power rifle in which there is no lost motion in the firing of the gun and in which a maximum firing efficiency and reliability is secured.

A still further object is to provide a device for converting a high powered gun chamber into a low powered chamber in which the rifle has substantially the same "feel" when being fired with low power ammunition as it does when being fired with the regular high power ammunition for which the gun was designed.

These and other objects which will herein be made apparent to those skilled in this particular art are accomplished by means of this invention one embodiment of which is described in the following specification and illustrated in the accompanying drawing wherein:

Figure 1 is a diagrammatic sectional view of the cartridge chamber of a high power rifle having a converter cartridge embodying my invention positioned therein; the converter cartridge having a low power rim fire "short" cartridge mounted therein;

Figure 2 is a sectional view of a converter cartridge illustrating a modified form of construction;

Figure 3 is a sectional view illustrating how my improved device may be used with rim fire "long" ammunition;

Figure 4 is a sectional view illustrating another exemplification of the device shown in Fig. 3; and

Fig. 5 is a sectional view similar to Fig. 1 illustrating another modification of my device for use in firing low power center fire cartridges.

Referring to the drawing in detail, 10 represents the barrel of a high power rifle which is mounted in a receiver or frame 11 in the usual manner. The barrel 10 has a bore 12 extending therethrough, the rear end of which is enlarged as at 13 to provide a cartridge chamber for receiving the usual "bottle neck" type of high power cartridge. The forward end of the chamber 13 is tapered and forms the throat 14 in which the bullet of the cartridge is adapted to be seated. Mounted in the receiver 11 is the usual breech, breech block, or breech bolt 15 which holds the cartridge in the chamber and which carries a firing pin 16 which is operated by the trigger (not shown) of the gun. The firing pin 16 is slidably mounted in the breech 15 and when released strikes the primer seated in the center of the cartridge base and explodes the shell.

The breech bolt 15 is locked in position to close the rear end of the chamber 13 by a suitable lug 17 which is adapted to be received in a slot 18 in the receiver 11 when the bolt is moved forwardly and turned to lock the cartridge in place.

In order that low power short range ammunition may be used in a rifle of this general type, in place of the regular high power center fire "bottle neck" cartridges designed for the rifle, I have provided a converter cartridge that con-

tains a low power cartridge and which is adapted to be positioned in the chamber 13 of the barrel 10.

My converter cartridge comprises a shell or casing 20 of the dimensions of a standard or regular "bottle neck" cartridge casing or shell and is provided at its forward end with a tapered chamber 21 for receiving a low power cartridge 22. The shell or casing 20 is open at the rear end thereof and the outer surface thereof may be either rimmed or grooved in the same manner as the regular "bottle neck" cartridges. The internal diameter of the circular opening, as well as throughout the major portion of the case, is slightly greater than the maximum rim diameter of the low or sub-powered cartridge 22 and this diameter is carried forward and terminates in a tapered or restricted throat or rim seat 23 leading into the cartridge chamber 21. Consequently, when the cartridge 22 is inserted in the case 20, the rim of the cartridge comes in contact with the rim seat or throat 23 of the cartridge chamber 21 and is prevented from slipping through said chamber. The cartridge chamber 21 is of substantially the same length as the shell of the cartridge 22 and consequently the entire shell is substantially enclosed therein while the bullet portion of the cartridge 22 projects beyond the forward end of the case 20, and when the converter is positioned in the chamber 13, extends into the throat 14 of the barrel 10.

To hold the cartridge 22 in the case 20, and to receive and transmit the explosion back thrust of the cartridge case 22 directly to the breech bolt 15, and to prevent back flare when the cartridge 22 is fired, a member 30, forming a breech extender is mounted in the case with its forward end bearing against the rimmed end of the cartridge 22 and its rear end flush with the rear end of the converter case or shell 20. This breech extender or filler may be made of metal, wood, or any other suitable material but owing to its lightness, cheapness, and ease of manufacture, I prefer to form the extender from any good medium hard, or hard wood, that is waterproofed as by treating with oil or paraffin.

The breech extender 30 which is cylindrical in shape and of such diameter as to be easily thrust into the case 20, is provided with a longitudinally extending opening 31 which extends at an angle from the center of the rear or breech end so that it terminates just inside the outer circumference of the forward end thereof. The centered end of the opening is enlarged as at 32 to receive the head 33 of a pin 34 which extends through the opening 31 and forms an extension of the firing pin 16. The pin 34 fits snugly in the opening 31 and is retained in position in the breech extender 30 during the handling of the converter cartridge by being sprung or slightly bent before it is inserted in the opening 31. The pin 34 which may be made of brass, iron, or any suitable mild soft steel, is of such a length that when inserted back of the cartridge 22 the ends thereof are flush with or slightly inside the ends of the breech extender 30.

In order to hold the extender 30 in the case 20, a segment 35 is split from the main body thereof for a short distance and this segment is slightly sprung or wedged open by inserting a segment of wire or a small piece of tin, spring steel, or other suitable material 36 between such segment and the main body of the extender. The segment 35 thus serves as a spring wedge between the breech extender 30 and the case 20 and adequately holds it in position therein without undesirable binding.

The breech extender 30 is of such length that when positioned in the case 20 back of the cartridge 22 the forward end thereof is in engagement with the rear end of the cartridge and the outer end may be slightly beyond or flush with the rear end of the case 20.

When a converter cartridge assembled in accordance with my invention is inserted in the rifle and the breech 15 is closed, the rear end of the extender 30 is in firm contact with the gun breech 15 and the front end is firmly held against the rimmed end of the cartridge 22, and since the ends of the firing pin extension 34 are flush with the ends of the breech extender 30, it is apparent that the forward end of the firing pin 34 bears against the rim of the cartridge 22 and head 33 is in positon to be struck by the firing pin 16. Thus, when the firing pin 16 comes in contact with the head 33 of the firing pin extension 34 the two pins virtually act as one and since the force is transmitted mainly by the thrust of one on the other there is no damage to either and the forward end of the extension pin strikes the cartridge squarely and efficiently on the rim to explode the same.

In Fig. 2 I have illustrated a modified form of my invention in which the casing or shell of my converter cartridge is made in two parts instead of one, as described. In this exemplification of my invention the case 20*a* of my converter cartridge terminates at its forward end in an inturned flange 20*b* which coacts with a flange 21*a* on the rear end of a cartridge receiving chamber 21*b* to hold it in position in the case. In assembling such a converter cartridge the cartridge 22 is placed in the chamber 21*b* and the two are then inserted into the case 20*a*, with the flange 21*a* bearing against the flange 20*b* of the case. The breech extender 30 is next positioned in the case 20*a* and holds the chamber 21*b*, as well as the cartridge 22, in place in the case 20*a*.

The above description of my invention has been limited to a converter cartridge in which a low power rim fire "short" cartridge is used in place of the regular ammunition. When it is desired to use a "long" cartridge instead of a "short", a ring or collar 40 (Fig. 3) is positioned in the case 20 with one end seated against the tapered or constricted throat 23. The internal diameter of the ring or collar 40 is substantially the same as the diameter of the chamber 21 and in effect forms an extension thereof and cooperates with the chamber 21 to completely support the shell of a "long" cartridge 22*a* which may be removably mounted or stationary. This collar or ring 40 secured in the case 20 is of such width that when the rimmed end of the shell abuts against the rear face of the ring, the bullet portion of the cartridge 22*a* projects beyond the end of the chamber 21 and extends into the throat 14 or rifling of the barrel 10 when the converter cartridge is inserted in the chamber 13.

If the modification illustrated in Fig. 2 is being used and it is desired to fire "longs" instead of "shorts" the cartridge can be readily converted by removing the chamber 21*b* and substituting therefor a chamber 21*c* (Fig. 4) which is of substantially the same length as the shell of the cartridge 22*a*, that is, it is substantially the same length as the combined chamber 21 and ring 40 illustrated in Fig. 3. This change can readily be made by inserting the chamber

21c with the cartridge 22a in place therein in the case 20a. The chamber 21c is provided intermediate of its length with a tapered surface 21d which is adapted to abut against the inturned flange 20b of the case 20a and hold the chamber 21c in proper position in the case.

When "longs" are to be used in my improved converter cartridge of the type illustrated in either Fig. 3 or 4, that is where the cartridge receiving chamber is made integrally with the case and a ring is inserted therein (Fig. 3) or the chamber is removable therefrom (Fig. 4) a breech extender or filler 30a is utilized in closing the rear end of the case 20—20a which is substantially similar in all details of construction as the extender 30 heretofore described in connection with Fig. 1, the only difference being that the extender 30a is shorter in length than the extender 30.

In Fig. 5 I have illustrated a converter cartridge for shooting low power center fire cartridges in a rifle designed to shoot high power center fire ammunition. In this exemplification of my converter cartridge a center fire cartridge 50 is positioned in a hollow thin walled shell or casing 51 which is of a restricted diameter at its forward end to provide a chamber 52 for receiving the cartridge 50. The rimmed end of the cartridge 50 abuts against a shoulder 53 at the rear end of the chamber 52 and the forward end or part of the cartridge shell extends beyond the front end of the converter case 51 and is seated directly in the forward end of the gun chamber 13. The cartridge 50 is held in the chamber 52 by a breech extender 54 of substantially the same character as that heretofore described with the exception that the firing pin extension 55 extends through a centrally drilled, longitudinally extending opening 56 instead of an opening extending at an angle through the extender block as in the previous modification.

The extender block 54 is of such length that when the converter cartridge case 51 is positioned in the chamber 13 the forward end of the extender block 54 will be held firmly against the rimmed end of the cartridge 50 and the rear end of the block will be in engagement with the breech block 15. The firing pin extension 55 is of such length that the forward and rear ends thereof are flush with or slightly inside the ends of the extender block 54 so that the forward end is abutting against the center of the rimmed end of the cartridge so that when the firing pin 16 is released it will drive the firing pin extension 55 against the primer seated in the center of the cartridge base and discharge the same.

From the foregoing description of my invention, it is apparent that I have provided a converter cartridge for high power rifles in which both center fire and rim fire shells either "shorts" or "longs" may be readily discharged without harm to the rifle or the breech mechanism, since the breech extender bears against the rimmed end of the cartridge and is firmly held in position by the breech bolt of the gun, whereby the back thrust of the explosion is transmitted directly and without lost motion to the gun breech. Further this breech extender member, for transmitting the back thrust to the breech bolt of the gun completely fills and seals all the space back of the cartridge and is of such rugged dimensions that it furnishes the maximum support to the backward firing thrust of the cartridge shell and maximum protection against back flare. The cartridge proper is also entirely sealed in as in the case of regular ammunition and the cartridge case completely supported, the sides of the shell being supported by walls of the chamber 21—21b—21c—52 which in turn is supported by the chamber 13 of the rifle and the rimmed end of the cartridge by the breech extender 30—30a—54 and as a result the danger of the cartridge rupturing with the possibilty of back flare is also entirely eliminated since a cartridge fired in my converter is doubly sealed from said back flare by the converter casing or shell and the breech extender and by the regular gun breech or bolt. Since the back thrust of the explosion is transmitted directly to the gun breech and since there is no possibility of back flare, fouling of the breech mechanism of the gun is also eliminated.

Further, converter cartridges made in accordance with my invention may be used in rifles with less injury to the rifling of the barrel than with regular ammunition due primarily to the fact that with my converter, low or sub-powered cartridges are fired which in most instances have non-jacketed bullets, and as a result the normal wear in the rifle barrel is less than with high power ammunition due to the lower pressures and velocities with which the bullet is projected through the barrel.

It is also apparent that with my converter cartridge soldiers may be readily trained in all types of loading and firing and in short range marksmanship with their actual service arms at relatively small cost and with the expense of special caliber rifles eliminated since the improved cartridge may be as readily worked through the rifle magazine and ejectors as the regular ammunition and since the bullets are seated in the bullet chamber or in the rifling of the barrel, their accuracy, range, etc. is the same as in the arms for which they were originally designed.

Not only are converter cartridges, made in accordance with my invention, simple to assemble, but several low power cartridges may be fired from the same case and with the same breech extender by simply removing the fired cartridge case and inserting a loaded one in place thereof. Such renewal of my converter cartridge can be readily accomplished by merely removing the breech extender, which is yieldably held in the case of the converter cartridge by a suitable spring action, and then inserting a loaded cartridge in the chamber of the converter case in place of the fired cartridge after which the breech extender is then reinserted in the converter case and the cartridge is again ready to be fired. The breech extender may be readily removed by applying a force to a suitable implement inserted in the fired cartridge shell and where a large number of converter cartridges are being used simple tools for holding the converter case and displacing the breech extender may be used to speed up the reloading of the converter cartridge.

While I have described certain exemplifications of my invention it is apparent that other changes, additions, subtractions, omissions may be made therein without departing from the spirit of the invention or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A converter cartridge comprising a case having a cartridge receiving chamber at one end, a solid member positioned in said case at the rear of said cartridge chamber and completely filling said case, said member having a slotted outer face to produce a segmental portion, and means for springing said segmental portion outwardly to hold said member in position in said case.

2. A converter cartridge comprising a cylindrical case having a cartridge receiving chamber at one end thereof, a cartridge mounted in said chamber, a solid breech member positioned in said case and completely filling the same with one end abutting against said cartridge and the other end flush with the end of said case, said breech member having a longitudinally extending cylindrical bore therethrough and a longitudinally extending slot at one end thereof, a firing pin slidably mounted in said bore, and expanding means in said slot to yieldingly hold said breech member in said case.

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