United States Patent

[11] 3,611,937

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[54] **RELOADABLE ADAPTOR FOR RIM-FIRE CARTRIDGES**
2 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **102/41,** 102/92.7
[51] **Int. Cl.** **F42b 5/00**
[50] **Field of Search** 102/38, 41, 42, 92.7

[56] **References Cited**

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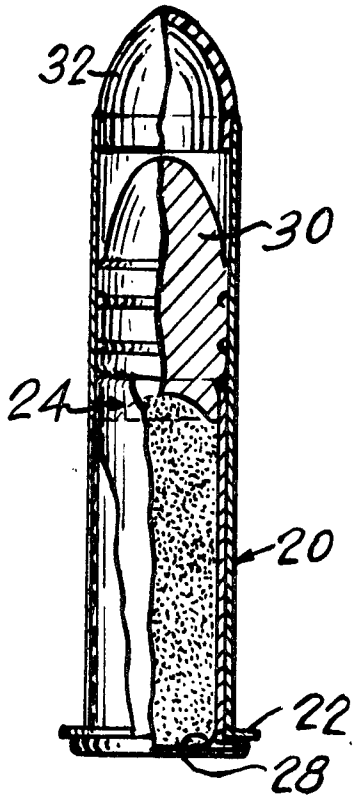
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ABSTRACT: An adapter shell for forming rimfire or centerfire ammunition, the shell fitting over a first shell of smaller size, the outside diameter and length of the adapter providing a gastight fit over the smaller size shell.



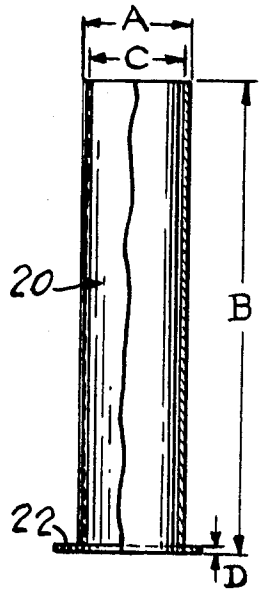


FIG. 1

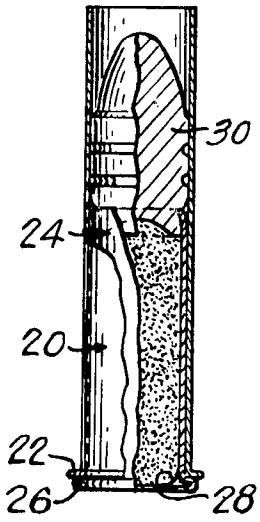


FIG. 2

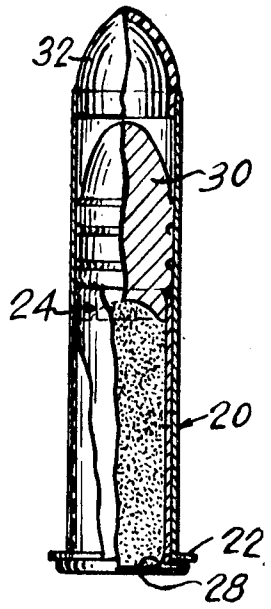


FIG. 3

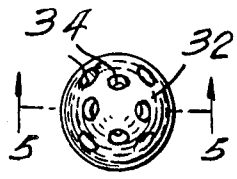


FIG. 4



FIG. 5

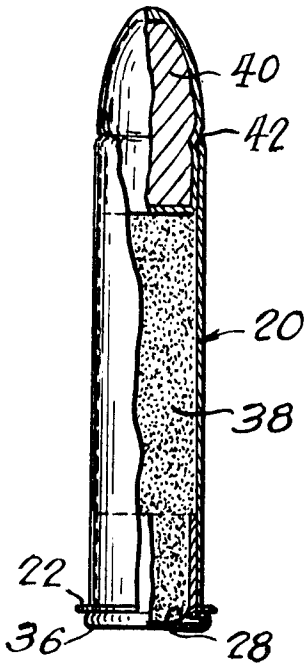


FIG. 6

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RELOADABLE ADAPTOR FOR RIM-FIRE CARTRIDGES

This invention relates generally to ammunition for firearms and, in particular, to a reloadable adapter shell for rimfire cartridges.

The basic concept of this invention provides a cylindrical cartridge adapter shell having an outwardly extending rim at one end thereof and being of such outside diameter and length that it will accurately fit into the firing chamber of a particular firearm, while having an inside bore diameter which has a close clearance fit over the cartridge shell of a standard factory made cartridge of similar gauge, but smaller diameter and length.

Throughout the following specification, the elevation, .22 gauge ammunition is referred to, wherein the adapter shell has an outside diameter equal to the outside diameter of a .22 magnum size cartridge shell and an inside diameter dimensioned to fit over the outside diameter of a standard factory made .22 cartridge, such as a .22 short, .22 long, or a .22 long rifle. However, it will be realized that this basic concept can be applied to ammunition of any gauge in which different diameter cartridge shells are assembled to bullets of the same diameter.

Experienced hunters, and other expert users of .22 gauge firearms, often prefer to use rifles which fire the magnum size .22 gauge ammunition, such ammunition being considerably longer and of slightly larger case diameter, and thus containing a much larger explosive charge, than standard factory made .22 gauge ammunition, such as the .22 gauge long rifle, etc. The increased charge size of the magnum cartridge makes it ballistically superior to the smaller standard size ammunition, giving it a much longer range, or greater accuracy and bullet penetration at similar ranges. However, magnum size .22 gauge ammunition is approximately five times more expensive than the standard factory made .22 gauge ammunition, thus making the use of magnum size ammunition for target practice, and such incidental usage, economically prohibitive. At the same time, firearms manufactured to fire magnum sized .22 gauge rimfire or similar ammunition cannot properly fire the standard .22 gauge ammunition having smaller size cartridge cases, due to resultant excessive gas leakage in the firing chamber, etc. Also, the detonation of magnum size ammunition is usually too noisy for use in target practice.

It is, therefore, the main object of this invention to provide an adapter shell means whereby a rifle designed and dimensioned to fire rimfire .22 gauge magnum or similar rimfire cartridges can also effectively fire cheaper standard factory made .22 gauge cartridges, such as .22 short, .22 long, .22 long rifle, etc. cartridge

Another object is to provide a guide cap for use in conjunction with the adapter shell means, as mentioned above, to enable the adapted cartridges to be fired in a repeater rifle.

Up to the present time only center fire cartridges are available for loading or reloading by an individual.

Thus, a further object of this invention is to provide an adapter shell means which will additionally permit rimfire .22 gauge magnum or similar cartridges to be effectively and economically hand loaded, enabling an individual to hand load and use the superior .22 magnum gauge ammunition for approximately the same price as the ballistically inferior standard factory made .22 gauge ammunition.

These and other objects and advantages of this invention will be further apparent by referring to the following detailed specification and figures, in which:

FIG. 1 is a side elevation, partly in section, of a cartridge adapter shell in accordance with this invention.

FIG. 2 is a side elevation, similar to FIG. 1, but showing a standard factory made .22 gauge cartridge, inserted into the adapter shell and ready to be fired.

FIG. 3 is a side elevation, similar to FIG. 2, but showing a guide cap inserted into the open end of the adapter shell.

FIG. 4 is a plan elevation of an alternative execution of the guide cap shown in FIG. 3.

FIG. 5 is a section on 5–5 in FIG. 4.

FIG. 6 is a side elevation partly in section of the adapter shell hand loaded in accordance with this invention.

Referring now to FIGS. 1 and 2, cylindrical adapter shell 20 has an outside diameter A and length B equal to the outside diameter and length of a .22 magnum cartridge shell, and a rim 22 extending outwardly from one end thereof and having a diameter equal to the diameter of the magnum cartridge firing rim. A suitable material for shell 20 would be uniform seamless brass tubing, which would be cut to the required length and rim 22 swaged outwardly on one end. Other suitable materials and methods of manufacture can be used as required. The inside diameter C of shell 20 is dimensioned to be a close sliding fit over the outside diameter of a standard factory made .22 gauge cartridge 24, such as a .22 gauge short, .22 gauge long, a .22 gauge long rifle, a .22 gauge blank, etc. The overall thickness D, of the rim 22 and the standard size firing rim 26, is equal to the thickness of a .22 gauge magnum firing rim.

It is thus seen that the overall dimensions of the assembly shown in FIG. 2 will enable it to properly fit into the firing chamber of a .22 gauge magnum size firearm, and that normal operation of the firearm will detonate the priming compound 28 in firing rim 26 and fire the bullet 30. This adaption is essentially for use in single-loader rifles, wherein the assembly is loaded, fired, the shell 20 and used standard cartridge case removed from the firing chamber, another standard cartridge 24 inserted into adapter shell 20, and the gun reloaded therewith.

FIG. 3 shows an assembly, similar to FIG. 2, but with the addition of guide cap 32 inserted into the upper open end of adapter shell 20. Such an assembly can now be used in repeater rifles, guide cap 32 enabling the assembly to be guided axially into the firing chamber.

Guide cap 32 may be made from any suitable plastic material, or any other suitable material, such as rigid paper, thin gauge sheet metal, etc.

When the assembly is fired, bullet 30 will enter guide cap 32 and force it outwardly through the rifle barrel, the cushion of air therein causing cap 32 to fall to the ground once it leaves the rifle barrel without interfering with the ballistic path or velocity of bullet 30.

FIGS. 4 and 5 show an alternative execution of guide cap 32, wherein holes 34 are formed therethrough. Thus no cushion of air will now be formed between bullet 30 and the inside of the guide cap, and the cap will remain on the tip of bullet 30 and be carried therewith to the target. Such an alternative guide cap, when made from metal, may effectively convert any bullet into a metal point type.

FIG. 6 shows adapter shell 20 hand loaded and ready for firing as a magnum size cartridge. A priming cap 36 is inserted into the rim end of shell 20. Priming caps 36 may be easily obtained from standard .22 gauge blank cartridges, etc. The shell is then filled with a charge of gunpowder 38, to the required density, and a bullet 40 is inserted. The upper end of shell 20 is crimped into groove 42, in bullet 40, to complete the assembly. The crimping operation is usually accomplished as the bullet is inserted.

It is thus seen that an adapter shell according to this invention achieves all the objects and advantages as set forth herein.

What I claim is:

1. A reloadable adapter for firing rimfire ammunition of a first size in a firearm having a rimfire firing chamber of a second size, said second size being of larger diameter and longer length than said first size, said adapter comprising a cylinder open at one end and having an adapter rim extending outwardly from the other end thereof, the inside diameter of said adapter being a close fit over the outside diameter of said first size ammunition, such that said first size ammunition may be inserted therein with the firing rim thereof adjacent said adapter rim, the outside diameter and length of said adapter shell and the combined thickness of said adjacent rims providing a gastight fit in said second size firing chamber, and a hollow conical guide cap inserted into the end of said shell remote from the rim end.

2. A reloadable adapter shell as set forth in claim 1 in which the guide cap is provided with a plurality of holes extending therethrough.