Dec. 26, 1950 C. D. BURNEY 2,535,624

CARTRIDGE CASE FOR AMMUNITION

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FIG. 1.

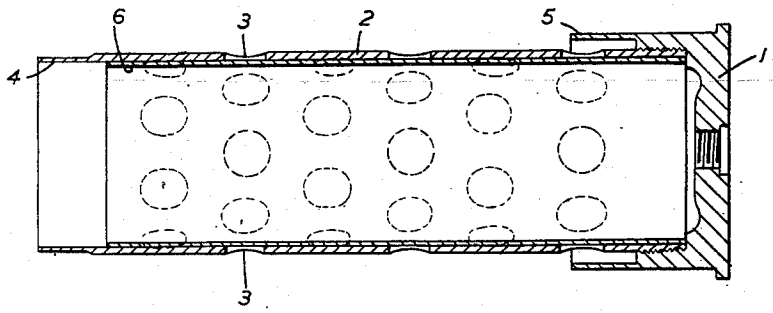


FIG. 2.

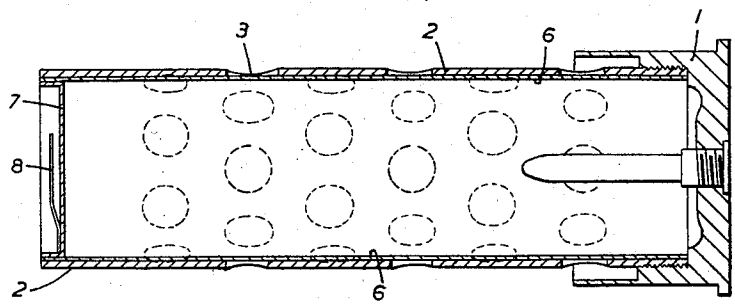
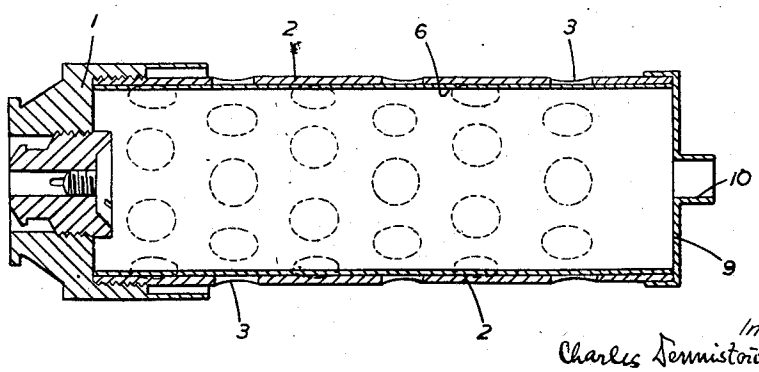


FIG. 3.



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FIG. 4.

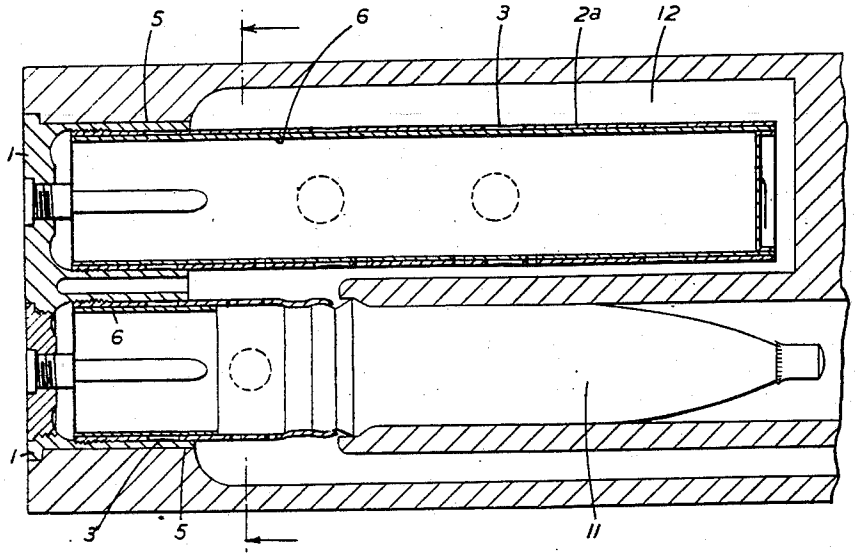
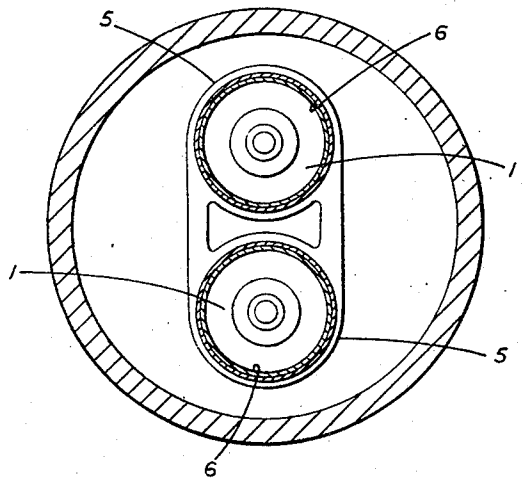


FIG. 5.



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CARTRIDGE CASE FOR AMMUNITION

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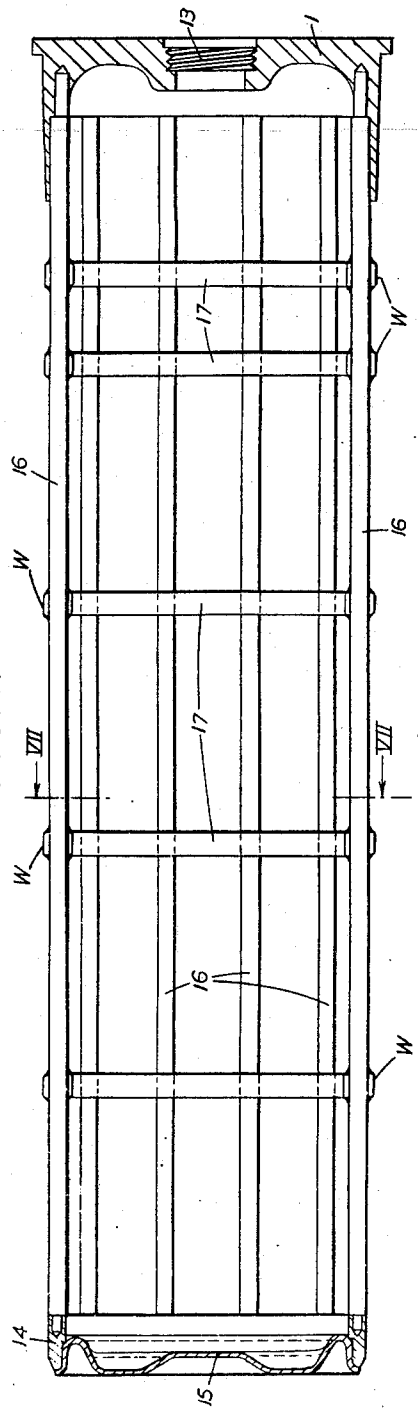


FIG. 6.

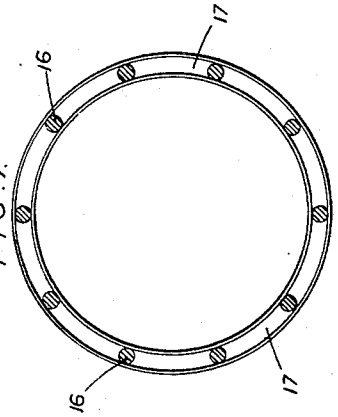


FIG. 7.

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2,535,624

CARTRIDGE CASE FOR AMMUNITION

Charles Dennistoun Burney, Baynards Park, near Cranleigh, England

Application March 22, 1946, Serial No. 656,488
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Patent expires March 29, 1964

6 Claims. (Cl. 102—38)

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The present invention was devised primarily for application to fixed ammunition, but it is also applicable to cartridge cases for the propellant charges of ammunition which is not of the fixed type i. e. the projectile and its propellant charge or charges are loaded separately into the breech chamber.

The invention has for its object to provide improved cartridge cases suitable for use with recoilless and other guns, in which it is necessary to provide for the free passage of propellant gases not only to the base of the projectile, but also to a surrounding space or chamber, which, in the case of recoilless guns, may be fitted with a nozzle or nozzles through which the gases escape freely to atmosphere.

According to the invention the propellant is contained in a cartridge case which has the required mechanical strength but on firing offers little or no resistance to the passage of the combustion gases radially into the surrounding gas space with which the nozzle or nozzles communicate.

To this end the cartridge case may have a double cylindrical wall, comprising a perforated metal wall, and an imperforate wall capable of disintegrating or being consumed on explosion, one wall being disposed within the other so that when the imperforate wall is destroyed on firing, the perforated wall, which remains, allows the free passage of the gases into the surrounding gas space. There may, for example, be a wall of waterproof paper or thin metal foil, disposed either outside, but preferably within, the perforated metal wall of the case.

The cartridge case may be of the same diameter as the projectile, or it may be greater in diameter than the projectile, in which case it may be furnished at its forward end with a neck of reduced diameter in which the rear end of the projectile fits. A shoulder may be formed at the junction of the neck with the forward end of the casing which engages with a shoulder where the barrel bore joins the cartridge chamber. The rear end of the outer casing may be fitted with a ring or cap to carry the firing cap and primer, said ring being radially flanged to provide a peripheral rim in the manner usual with cartridge cases. If desired the diameter across the flange or rim may be less than the maximum diameter of the ring and outer casing of the cartridge.

According to a modification the propellant charge may be divided into two parts each contained in a casing according to the invention,

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such as a perforated outer metal casing with an imperforate inner lining as already described, one of said partial charges being disposed behind the projectile and the other part being disposed at the side of the projectile, and being of a length substantially equal to the overall length of the first part of the charge and the projectile.

According to another modified construction the cartridge casing may be built up of metal rods to form a cage-like cylinder into which the charge, contained in a fabric bag, or container of waterproof and consumable material, is loaded. Thus the casing may comprise a front end ring joined to a rear end cap by parallel rods arranged in cylindrical formation, the said rods being encircled at several points between their ends by longitudinally spaced rings or bands adapted to prevent outward bulging of the rods on firing.

These bands may be closer together towards the rear end cap of the case, to give greater support to the rear portion of the charge if found desirable.

In order to give satisfactory obturation, the cylindrical double walled cartridge casing may be fitted into a base piece having a free skirt portion which can expand independently of the casing, and is preferably reduced in thickness by an internal groove, or by tapering, to facilitate its expansion into close contact with the surrounding chamber wall or breech ring.

In order that the invention may be clearly understood and readily carried into practice it is illustrated, by way of example only, by the accompanying drawings, in which:

Figure 1 is a longitudinal section of a cartridge case for fixed ammunition, for use in quick firing recoilless guns;

Figure 2 is a longitudinal section of a cartridge case for a propelling charge separate from the projectile, of a recoilless gun of heavier type;

Figure 3 is a longitudinal section of a cartridge case for fixed ammunition, in which the projectile is of less diameter than the cartridge case;

Figure 4 is a longitudinal section of a modified form of cartridge case for fixed ammunition, whereby the overall length of the projectile and cartridge case is reduced, and

Figure 5 is a cross-sectional view thereof.

Figure 6 is a longitudinal section of a modified construction in which the cartridge case is of skeleton construction, and

Figure 7 is a cross sectional view thereof.

Referring to Figure 1, the cartridge case comprises a flanged cup shaped base piece 1 into

which is screwed an open ended sheet metal sleeve or cylinder 2 of brass or steel, in which perforations 3 are formed. The forward end of the sleeve 2 is reduced in thickness at 4, so that it can readily be crimped into a groove round the base of a shell fitted into the mouth of the sleeve. To facilitate obturation the base piece 1 has a skirt 5 reduced in thickness so that the gas pressure can readily expand it into tight contact with the wall of the cartridge chamber, or breech block ring surrounding said base piece.

In order to protect the propellant charge loaded into the perforated cylinder or casing 2 from atmospheric influence, the casing 2 may be lined with glazed or waxed paper or like waterproof material 6, which becomes consumed when the propellant is fired, and then allows free escape of the gases from the sleeve 2 into the surrounding chamber space. Alternatively the lining 6 may consist of thin metal foil, such as brass or copper, which burns or disintegrates on firing. If desired the paper or other lining 6 may be cemented into the perforated metal sleeve 2. The screw thread on casing 2 may also be cemented before screwing into base piece 1.

Referring now to Figure 2, which shows a cartridge case for large calibre ammunition, in the case of which the projectile and propellant charge are separately loaded, the construction is substantially the same as that of Figure 1, but the forward end of the perforated casing 2 is not reduced in thickness for crimping round the shell base. The open end of the casing 2 is in this case closed after the propellant has been loaded into the casing, by a leather or fibre cap 7 which may be provided with a tab 8 to facilitate its removal before firing. If desired, however, the cap 7 may be left in and not removed before firing.

Figure 3 illustrates a construction of cartridge case for fixed ammunition in which the projectile is of less diameter than the cartridge casing 2. The construction of the cartridge casing is substantially as in Figures 1 and 2, corresponding parts being correspondingly numbered, but the front end of the casing 2 is fitted with a metal cover piece or cap 9 having a reduced neck 10 to receive the base of the projectile, which may be provided with a groove into which the neck 10 can be crimped.

Figures 4 and 5 illustrate a modified construction for fixed ammunition whereby the combined length of the charge and projectile may be reduced, and the speed of automatic loading thereby increased.

The propellant charge is in this case divided into two parts, one of which is disposed behind the projectile 11 and enters into the breech chamber of the gun, and the other of which is disposed by the side of the projectile, so as to enter into a lateral chamber space 12.

The two sections of the charge are housed in perforated metal casings 2, 2*a* as in the previous constructions, but the casing 2*a* is of a length approximating to the combined lengths of the casing 2 and projectile 11. The two casings 2 and 2*a* are screwed into a common base piece 1*a* which is of oval shape and may be fitted with separate firing caps and primers, either or both of which may be used for firing the combined charge, the ignition of one charge necessarily leading to the ignition of the other charge.

As in the previous constructions the cases 2, 2*a* are lined with paper, metal foil or other consumable or disintegrable material 6, and obturation is obtained by expansion of the skirt 5 of the base piece 1*a* against the wall of the cartridge chamber or breech ring opening into which the base piece 1*a* fits.

It should be understood that various modifications may be made in the constructions herein described and illustrated without departing from the invention. For example, the perforated wall may, if desired, be the inner wall of the casing, being enclosed in an imperforate wall or layer of waterproof paper, metal foil, or the like.

According to the modified construction illustrated by Figures 6 and 7, the wall of the cartridge case is replaced by a series of longitudinal parallel rods 16 extending from base piece 1 to a ring 14 at the front end of the cartridge, to enclose a cylindrical space to accommodate the charge. The rods 16 are encircled by a plurality of longitudinally spaced rings or bands 17 welded to rods 16 at W which are preferably spaced closer together towards the base piece 1. The detonator or percussion cap screws into the hole 13 in base piece 1. The cap 15 is provided on ring 14.

I claim:

1. Ammunition for quick firing breech loaded guns having a breech chamber of greater diameter than the bore of the gun barrel, comprising in combination, a disc-shaped base piece; a cartridge case having a cylindrical wall of apertured construction and mounted on said base piece concentrically with the same; a projectile fitted into the mouth of said cartridge case; and a relatively short spacing ring having a greater diameter than said cartridge case and mounted on said base piece spaced from said cartridge case, said relatively short spacing ring being open at its front end so as to communicate with said breech chamber when it is inserted into the same, spacing said cartridge case from the wall of the breech chamber.

2. Ammunition for quick firing breech loaded guns having a breech chamber of greater diameter than the bore of the gun barrel, comprising in combination, a disc-shaped base piece; a cartridge case having a cylindrical wall of apertured construction and mounted on said base piece concentrically with the same; a projectile fitted into the mouth of said cartridge case; and a relatively short spacing skirt having a greater diameter than said cartridge case and mounted on said base piece spaced from said cartridge case, said relatively short spacing skirt being open at its front end so as to communicate with said breech chamber when it is inserted into the same, spacing said cartridge case from the wall of the breech chamber.

3. Ammunition for quick firing breech loaded guns having a breech chamber of greater diameter than the bore of the gun barrel, comprising in combination, a disc-shaped base piece; a cartridge case being of skeleton construction and including a plurality of parallel rods mounted on said base piece and a plurality of rings secured to said rods at their free ends and at intervals along their lengths; and a relatively short annular spacing projection having a greater diameter than said cartridge case and provided on said base piece concentrically with said cartridge case.

4. Ammunition for quick firing breech loaded guns having a breech chamber of greater diameter than the bore of the gun barrel, comprising in combination, a base piece; a first apertured cartridge case containing a propellent charge and

mounted on said base piece; a projectile fitted into the mouth of said first cartridge case; a second apertured cartridge case containing also a propellent charge and mounted also on said base piece; and a relatively short spacing ring mounted on said base piece surrounding the rear end portions of said cartridge cases, spacing the same from the wall of the breech chamber.

5. Ammunition for quick firing breech loaded guns having a breech chamber of greater diameter than the bore of the gun barrel, comprising in combination a substantially elliptical base piece; a first cartridge case having a cylindrical wall of apertured construction and mounted on said base piece; a projectile fitted into the mouth of said first cylindrical cartridge case; a second cartridge case having also a cylindrical wall of apertured construction and mounted also on said base piece; and a substantially elliptical relatively short spacing ring arranged substantially along the edge of said substantially elliptical base piece surrounding the rear end portions of said cartridge cases, spacing the same from the wall of the breech chamber.

6. Ammunition for quick firing breech loaded guns having a breech chamber of greater diameter than the bore of the gun barrel, comprising in combination, a disc-shaped base piece; a cartridge case having a cylindrical wall of apertured construction and mounted on said base piece concentrically with the same; a projectile fitted into the mouth of said cartridge case; and a relatively short spacing ring having a greater diameter than said cartridge case and mounted on said base piece concentrically with said cartridge case, spacing said cartridge case from the wall of the breech chamber.

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