N° 4069 A.D. 1906

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COMPLETE SPECIFICATION.

"Improvements in Cartridges having Multipart Projectiles".

I, GEORG LUGER, of 28 Weimarer Strasse, Charlottenburg, near Berlin, Germany, Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Cartridges having bullets consisting of several parts located behind each other have already been proposed for firing from small arms, but they were merely adapted to produce an irregular grape-shot like dispersion of the bullet parts over a more or less large spreading area, whilst disregarding the higher accuracy generally attainable with individual bullet shots. Projectiles are also known, which are formed of two or more bullet parts, which for the purpose of retaining unity are connected together, or screwed one within the other, or brought together by pressure, thus forming one single inseparable projectile. Cartridges comprising such multipartite bullets, have also been so constructed that a rear driving bullet part is adapted, when the cartridge is fired, to drive asunder the front bullet bodies or parts, which in flying apart fulfil to some extent the above-mentioned object of a spreading shot, but the driving bullet itself fails to maintain its proper trajectory of flight and deviates in a most irregular manner, for the accuracy of aim is interfered with by the front bullet pieces. This disadvantageous effect takes place also in the actual use of multipartite projectiles of that known construction, in which the main front bullet has not the maximum mass as compared with the mass of each of the other parts and according to which construction, one relies on the inner apex engagement or central contact between the parts leaving a loose play at their circumferential zones in consequence whereof a positive alignment in the axial centre line for the initial thrust cannot be attained. According to the invention, the improvement consists in so constructing the multipartite projectile that the foremost bullet part, in order to warrant its predominant precision, trajectory of flight and efficiency (also for longer distances), has the greatest mass and that the other part or parts having a graduated less mass are made to fit each front part with an interlocking projection, providing for the necessary support against non-centering but yet enabling the free disconnection of the parts in the flight. Consequently, the latter are adapted to deviate and to cover a secondary spreading zone approximate to the hitting point of that main bullet part. Thus, the marksman attains the advantage, desirable especially for hunting purposes when shooting with ball shot, in such a manner that with precise aiming, two or more bullet parts can be simultaneously brought to the point aimed at, which when they both meet the object (game), produce a stronger deadening effect, or when they arrive apart increase at least the chance of hitting the object singly. Furthermore, if employed in small arms, which are used as means of defence in close action, the disadvantage peculiar to bullets of small calibre and consisting in their comparatively less stopping power, can be overcome by employing such multipartite bullets.

The invention also comprises a peculiar arrangement to the effect that the separation of the different parts of the bullet is ensured; for this purpose, the hard metal which is employed as the ordinary jacket covering the outer bullet surface inwardly overlaps where the bullet parts contact each other, thus a rid-

[*Price 8d.*]

ing the possibility of jamming or wedging the parts. As a modification, an unsymmetrical formation of the rearward parts of the bullet may be employed so that the tendency of spreading the latter is increased.

On the accompanying drawing, a constructional form of the invention with a two-part bullet is shown by way of example.

Figures 1 and 2 show both parts of the bullet (separately) in section;

Figure 3 shows the cartridge with the bullet in partial section.

Figures 4 and 5, which are sectional and detail plan views of the bullet show the modification with unsymmetrical formation of the rearward part.

As shown in the drawing, the projectile is multipartite in so far as it consists of only two parts or bullets *a b*, which are arranged separately one behind the other in the cartridge case *c*. The front ogival-headed part *a* serves as the projectile proper as the preponderating mass and affords a similar property as single acting bullets for longer distances, whilst for the rear part *b* of the bullet, the conditions are that it serves only as an auxiliary bullet and increases the stopping power preferably at short distances, especially as owing to its form, it pierces full-sized holes. Thus, it produces, even when incidentally hitting the object in an oblique position, a more intensive shock by the auxiliary shot than can be produced with the main bullet *a*, which when penetrating forms the shot hole by way of displacement and has its path merely in a narrow smooth channel. The invention consists for the said purpose first in attributing to the front part *a* of the bullet the larger mass as compared with the mass of the rear part and then making the rear part or parts to fit each front part with an interlocking projection for ensuring their mutual support. Thus the rear parts *b* may serve as a gas-check. The preferred form, as shown, is such that the front part is recessed and that the rear part *b* engages in the recess with its forward extension b^1; by the central recess of the part *a*, the centre of gravity of the latter is advantageously located more towards the front. In contradistinction thereto, the rear part *b* has its centre of gravity in an exceptional rearward position and such a differential configuration that the precision-conditions as available for the front part do not apply in the same degree to this rear part. Therefore, the said member is not able to follow in the trajectory or flight of the front part of the bullet, but is apt to take a lateral course more or less deviating from that of the main bullet.

It is of moment that the separation of both bullet parts *a* and *b* takes place with certainty; for this purpose, a further feature of the invention consists in arranging the usual hard metal jacket *m* (formed of steel, nickel, nickel-copper *etc.*) of the bullet-core with overlapping shoulders at m^1 on the part *b* and at m^2 on the main bullet *a*, the overlapping shoulders forming the abutting joint between the parts *a* and *b*. Owing to the hardness of the metal at m^1 m^2, any jamming or deformation, which may otherwise cause a binding of the parts *a b* in consequence of the shot is obviated.

According to the described arrangement of the double bullet *a b* which is held in the cartridge case *c* in the usual manner, the effect is attained, when firing from a fire arm with twisted barrel, that the parts *a b*, which in consequence of the twist in the rifling have each taken up the rotary movement, separate on leaving the barrel, whereupon the front bullet part *a* must gain in its trajectory, a gradually increasing start over the subsequently following bullet part *b*. Whilst the former, in consequence of the rotation on its central axis of gravity maintains the trajectory of flight in the proper position, the bullet part *b* will soon not only remain behind owing to the air resistance (acting on the shoulder faces m^1) but also take up gyratory movements and deviate, the result being that the two bullet paths diverge in such a manner that when the bullet part *a* meets its hitting point, the bullet part *b* reaches a neighbouring point with lateral deviation, which is located in a zone surrounding the hitting point of the bullet-part *a*.

Figures 4 and 5 show that modification of the invention, according to which

the bullet part *b* is made unsymmetrical with respect to its axis by being recessed laterally at b^2, for the purpose of intentionally adapting same to take up the eccentric gyratory movement and the deviation of its direction from the trajectory of flight of the main bullet. By suitably proportioning the dimensions and weight, the average lateral deviation may be adjusted to suit practical requirements, for instance, so as to spread 20 centimetres at a distance of 50 metres.

More than two bullet parts may be arranged one behind the other, each front part having a surplus of material in respect of the next following one. Only the foremost part should possess the predominant property owing to the position of the gravity centre and appropriate form, to ensure a precision-shot. The several bullets in this combination may have suitable means (gas-checks) interposed between them. A loose interlocking of the parts is, however, preferred, which is effected in a similar manner as shown in the drawing by socket engagement of the parts following each other.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1: In cartridges for small arms, the combinaton of two or more bullet parts forming a multipartite projectile and arranged one behind the other separately, the front part being provided with the preponderating mass in view of higher energy of shot and the ballistic capacity and thus adapted to serve as the main projectile, whereas the rear part or parts are made to fit each front part with an interlocking projection for ensuring their mutual support at the outset and yet enabling a free disconnection of the parts in the flight, substantially as described and shown in the drawing.

2: In cartridges for small arms, the combination of two or more bullet parts arranged one behind the other separably, each forward part being formed to have a preponderant ballistic capacity as compared with the subsequent part, the parts being jacketed and shouldered so as to abut each other transversely to the bullet axis at the joints with hard metal jacket portions for facilitating their separation when the shot is fired, substantially as described and shown in the drawing.

3: In cartridges for small arms, the combination of two bullet parts arranged one behind the other separably, the first part being formed to have a preponderant ballistic capacity as compared with the second part or auxiliary bullet and provided with a central recess behind, wherein a forward protruding member of the second or rear part is socketed, both parts which are jacketed with hard metal in the ordinary manner having shoulder rims (m^1 and m^2) formed of the said metal, so as to afford abutting faces at the joint transversely to the bullet axis for facilitating the separation of the bullets substantially as described and shown in the drawing.

4: In cartridges for small arms, the combination of two or more bullet parts arranged one behind the other separably, each forward part being formed to have a preponderant ballistic capacity as compared with the subsequent part, the latter being so unsymmetrically constructed or recessed that the tendency to deviate from the trajectory of flight of the preceding bullet is increased in favour of an intentional spreading effect, substantially as described and shown in the drawing.

Dated this 19th day of February 1906.

ALLISON BROS.,
Agents for the Applicant.

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FIG. 1.

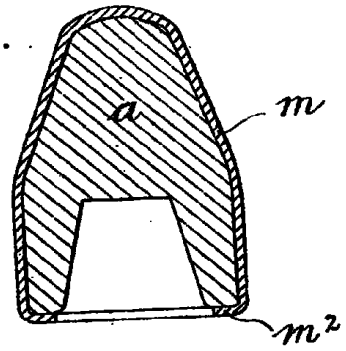


FIG. 2.

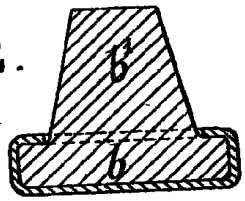


FIG. 3.

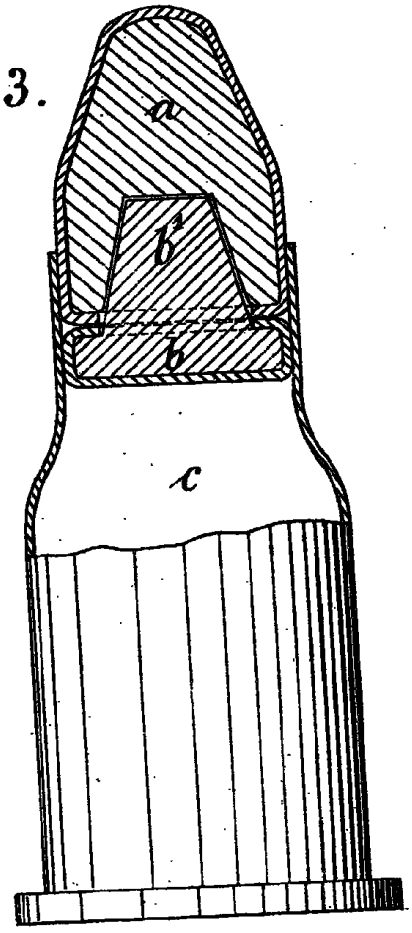


FIG. 4.

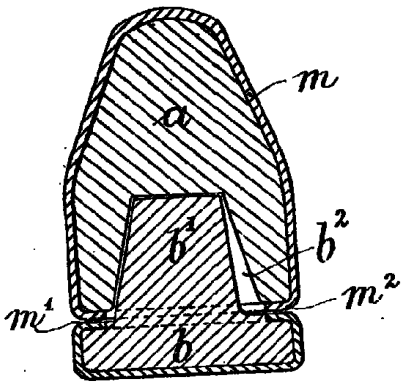
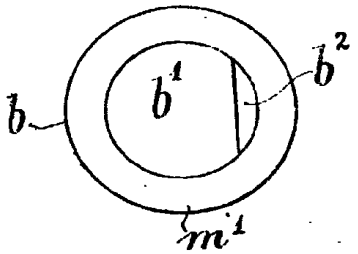


FIG. 5.



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