E. E. GREGORY.

GUN CARTRIDGE AND PROJECTILE.

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**1,166,360.** Patented Dec. 28, 1915.

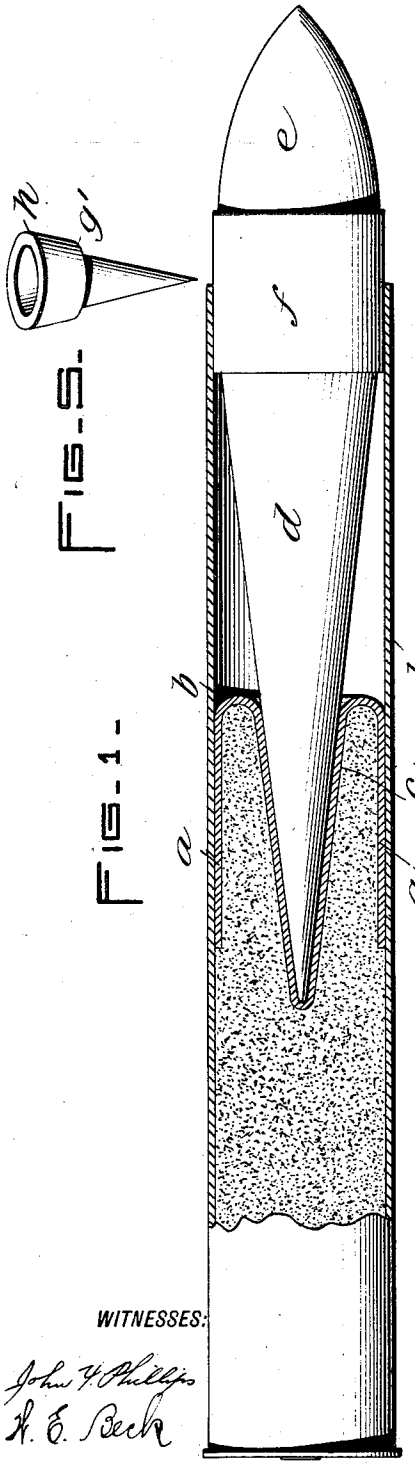



FIG. 1.




FIG. 5.

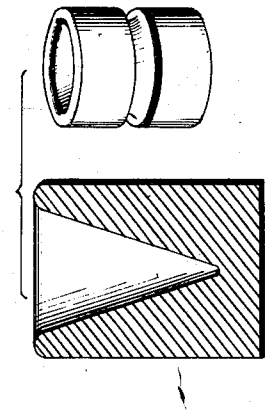


FIG. 4.

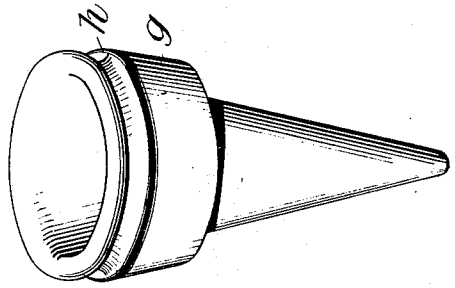



FIG. 3.

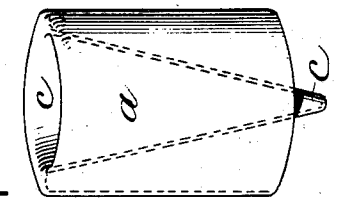



FIG. 2.

WITNESSES:

John Y. Phillips

H. E. Beck

INVENTOR

ELI E. GREGORY

BY Munn & Co.

ATTORNEYS

# UNITED STATES PATENT OFFICE.

ELI E. GREGORY, OF CENTRAL CITY, KENTUCKY.

## GUN CARTRIDGE AND PROJECTILE.

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*To all whom it may concern:*

Be it known that I, ELI E. GREGORY, a citizen of the United States, and a resident of Central City, in the county of Muhlenberg and State of Kentucky, have made an Improvement in Gun Cartridges and Projectiles, of which the following is a specification.

My invention relates to an improved device for use in gun cartridges to serve as a wad and gas-check in shooting stream-line bullets or other projectiles, including bombs.

The device may be described as cup-shaped in respect to its general form, and it may be made in various sizes and modifications in regard to details of shape and construction.

The invention further includes a projectile proper having certain peculiarities of construction and operation, the tail-end of the same being adapted for reception and support by the central tapered portion of the gas-check and wad.

The details of construction, arrangement, and operation of parts are as hereinafter described, and illustrated in the accompanying drawing, in which,

Figure 1 is a longitudinal section of a cartridge with my improved wad and gas-check and projectile proper arranged in the mouth of the cartridge shell. Fig. 2 is a perspective view of the wad and gas-check. Fig. 3 is a perspective view of a modification. Fig. 4 includes a longitudinal section and a perspective of two modified forms of the wad and gas-check. Fig. 5 is a perspective view of another modification particularly adapted for cartridges of small caliber.

As shown in Figs. 1 and 2, the cup-shaped device constituting the wad and gas-check for bullets, and bombs, or other types of projectiles, is shown as constructed, in the preferred form, of sheet copper or sheet alloys having the desired toughness and high fusing point combined with the degree of flexibility and softness which adapts them to take the rifling and thus check the gases due to combustion of the explosive agent.

The device may be economically manufactured by stamping it out of sheet copper or other sheet metal or by molding it in the forms represented in Figs. 3, 4, 5.

In Figs. 1 and 2, *a* indicates the cylindrical body of the wad and gas-check, the same fitting the inner wall of the cartridge shell *b*. A central portion *c* is formed by turning back the metal from the front and thus producing a hollow tapered portion which may project beyond or have greater length than the cylindrical body *a*. In Fig. 1 the explosive mixture is shown filling the annular space between the cylindrical outer portion *a* and the central tapered portion *c*. The cavity of the tapered portion serves to receive and support the steel tail, or tapered rear end, *d* of the projectile. The projectile has a conical striking end *e*, having a soft metal band or sleeve which is adapted to fit in the mouth of the shell *b*, and when the cartridge is discharged such band takes into the rifling of the gun, so as to give the projectile the desired twist or rotation.

In the form of the wad or cup-shaped device shown in Fig. 3, a front or larger end portion is constructed with a taper *g* having a sharp shoulder *h*, which construction adapts it for easy insertion in the cartridge shell, while the circular edge formed by the shoulder further adapts it to scrape a gun barrel very effectively when the weapon is discharged.

Fig. 4 includes two solid metal forms which may be used with advantage under certain conditions.

Fig. 5 is a form related to the one shown in Fig. 3, in that it has a tapered portion *g'* and a sharp shoulder or edge *h*. This form of the cup-shaped device is particularly adapted for cartridges of small caliber, and its sharp edge will scrape the barrel very effectively.

It will be understood that, in practical use of the invention, particularly as illustrated in Fig. 1, upon explosion of the charge the wad and gas-check is discharged from the shell and carries with it the stream-line bullet or other form of projectile whose soft band *f* takes into the rifling of the weapon, while the cylindrical body of the gas-check expands also into the rifling and thus forms an additional guard against escape of gas past the projectile. More force is derived by use of the cup or gas-check since leakage is prevented around the bullet. The energy of the explosion is centered on the middle of the bullet as it rotates around its axis in consequence of spiral rifling. It does away with all fouling and fusing of the bullet by the hot gases, and it also cleans out the residue of the previous discharge and thereby lengthens the life of the gun.

It makes the velocity and range of the projectile greater; also lessens the breech pressure and recoil, and especially conduces to very accurate shooting.

It is apparent that the long or tapering rear end of the projectile proper lessen the air resistance as compared with projectiles which have a blunt tail or "saw-off," as the phrase goes. Thus, not only is the great pull-back largely overcome by the streamline construction of the tail of the projectile, but friction is also reduced and greater accuracy obtained.

I claim:—

1. A cartridge comprising a shell, a projectile proper, and a cup-like gas-check inserted in the shell and having a substantially cylindrical body adapted to fit the interior of the shell, and a central rearward projection which is hollow and tapered and thus adapted to serve as a receptacle and support for the tail of the projectile proper.

2. A cartridge comprising a shell, a projectile properly inserted in the mouth of the same, a cup-like gas check inserted in the shell in rear of said projectile, the gas-check having a cylindrical body adapted to fit the shell and its front portion constructed with a central, rearwardly projecting hollow taper, the same being adapted to receive and support the tapered tail of a projectile proper, as described.

3. A cup-like gas-check adapted to serve as a support for the tail of a projectile, the same comprising an enlarged head or front portion, and a rearwardly projecting hollow tapered portion, the enlarged head being provided with a sharp edge or shoulder, as described.

ELI E. GREGORY.

Witnesses:
I. B. HENDRICK,
C. E. GREGORY.