

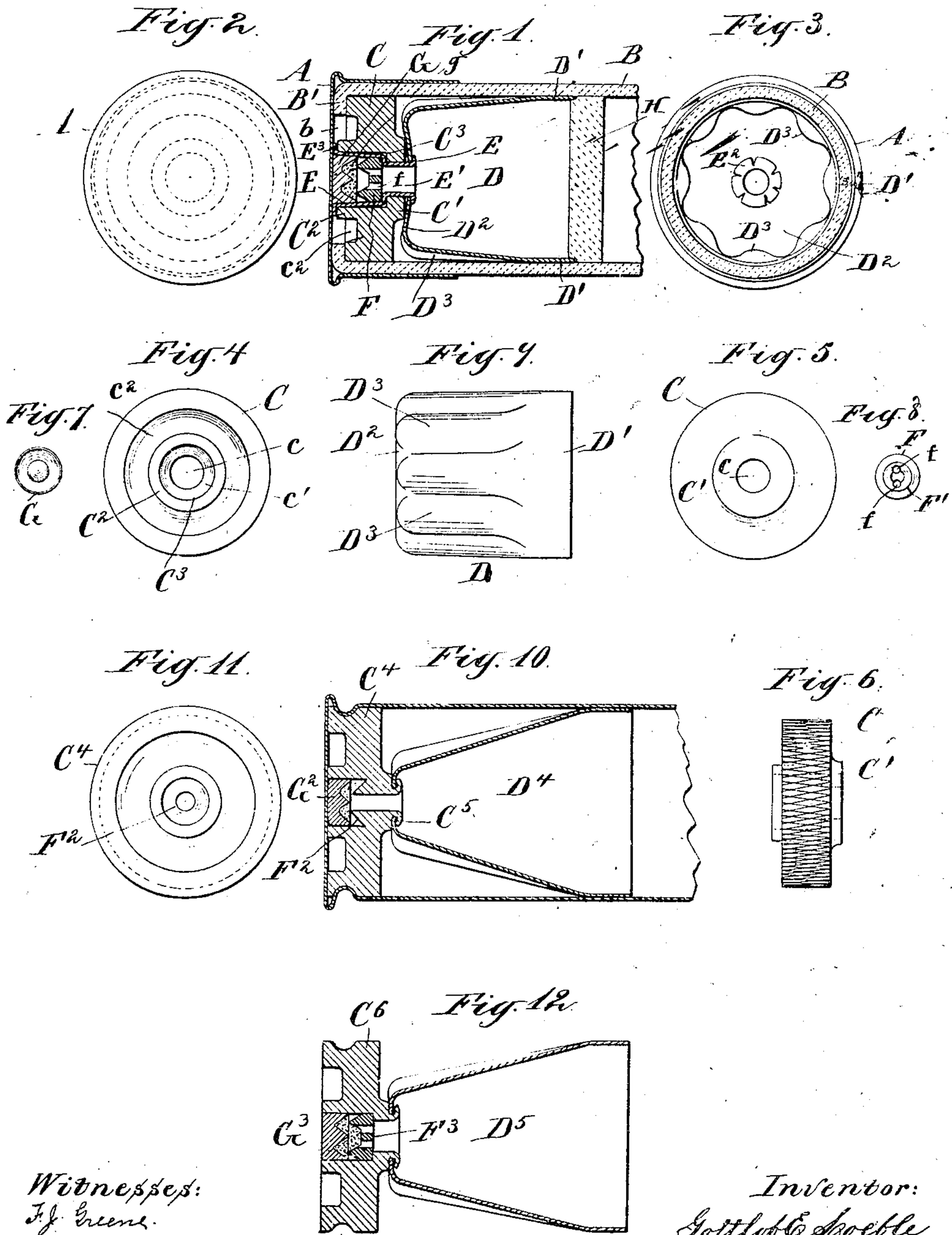
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CARTRIDGE.

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UNITED STATES PATENT OFFICE.

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CARTRIDGE.

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To all whom it may concern:

Be it known that I, GOTTLOB E. LOEBLE, a citizen of the United States, residing in the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Cartridges, of which the following is a specification.

The invention relates to fixed ammunition for firearms, and the main object of the invention is to provide a construction by which the shock of recoil is lessened, thus permitting charges of greater efficiency to be safely employed.

Another important object is to provide a sealed or completely closed base with space for the fulminate gases to expand harmlessly at the instant of explosion and thus lessen the danger due to the escape of such gases rearwardly through the base of the shell, and permit with safety the use of large fulminate charges insuring certainty of fire.

The invention consists in certain novel features, and details of construction and arrangement by which the above objects are attained, to be hereinafter described.

The accompanying drawings form a part of this specification and show approved forms of the invention.

Figure 1 is an axial section through the rear portion of a paper shell adapted for use in a shotgun. Fig. 2 is a view of the rear face thereof. Fig. 3 is a transverse section of the same showing the interior portions in elevation. Fig. 4 is a view of the rear face of the base-block. Fig. 5 is a corresponding view of the front face. Fig. 6 is a side elevation of the same base-block. Fig. 7 is an end view of the primer. Fig. 8 is a similar view of the anvil. Fig. 9 is a side view of the powder-cup or recoil absorber. Fig. 10 is an axial section through the rear portion of a metallic shell cartridge showing a modified form of the invention. Fig. 11 is a view of the rear face of the base-block therefor. Fig. 12 is an axial section through a base-block and attached powder-cup, showing another modification.

Similar letters of reference indicate like parts in all the figures.

Referring to Figs. 1 to 9 inclusive, showing the invention as applied to a paper shot-shell, A is the metallic base, B the paper tube received therein and flanged inwardly at B¹ to lie against the inner face of the

base A and held by a circular base-block C which is forcibly inserted within the tube B.

The base-block is preferably of metal and has an axial opening *c* at the front, through the boss C¹, and is counterbored at the rear at *c*¹, through the rearwardly extending nipple C², to form an internal annular shoulder C³, the axial opening thus provided receives the primer-tube E. The nipple C² extends beyond the rear face of the base-block to a distance approximately equal to the thickness of the flange B¹ thus providing an annular space *b* for the expansion of fulminate gases, which space is increased by the annular channel *c*² in the rear face of the base-block.

D is a cup of sheet metal, cylindrical at the forward open end D¹ which matches closely within the paper tube B, and tapered slightly to the bottom D² and provided with longitudinal corrugations D³ extending from the bottom to the cylindrical portion at the front. The bottom is perforated centrally to match to the opening *c* in the base-block and is secured to the latter upon the boss C¹ by expanding and curling the forward end E¹ of the primer-tube upon the inner face of the bottom D² as at E².

The primer-tube E is of metal slightly tapered and is received in the counterbore *c*¹ of the base-block, the extension E¹ is of less diameter and forms an annular shoulder or offset lying upon the shoulder or rabbet C³. The rear end of the tube E is curled outwardly at E³ upon the nipple C² and thus serves with the flange E² as a hollow rivet firmly joining the cup D to the base-block C.

Within the primer-tube is an anvil F having fire openings *f* therethrough, and a primer G carrying fulminate *g* presented to the anvil. The rear face of the primer lies against the inner face of the metallic base A in position to be struck and forced forward by the action of the firing-pin of the gun against the sealed base.

The primer G is a small cylindrical or slightly tapered block having a cavity in its front face, shown as an annular V-shaped channel, and the anvil F is a similar block having an angular spur, shown as a sharp annular ridge F¹, adapted to induce the required friction with the fulminate when the latter is forced forward by the impact of the firing-pin upon the base of the shell, the fire passing through the openings *f* in the anvil to ignite the powder charge.

The forward movement of the conical primer in the tapered primer-tube tends to tightly seal or plug the latter against the escape of fulminate gases rearwardly, but in the event of such escape past the primer the gases may expand harmlessly in the space $b\ c^2$ without danger of bursting the closed metal base A.

The charge of powder is received in the cup D, held therein by the wad H, and on exploding performs its function as usual, but the initial rearward shock due to the explosion is lessened by the expansion of the corrugations D^3 into the surrounding space within the cartridge, thus reducing the recoil of the gun for a given charge of powder, or, correlatively, permitting the use of a larger or heavier charge.

Fig. 10 shows a metallic cartridge in which the powder-cup D^4 is more sharply tapered and is joined to the base-block C^4 by spreading therein a flange C^5 formed directly on the front face of the block. In this cartridge the anvil F^2 is formed integral with the base-block and receives the primer G^2 , the primer-tube being omitted.

In the form shown in Fig. 12 the powder-cup D^5 is simply joined to the base-block C^6 and the latter is bored and counterbored to receive the anvil F^3 and primer G^3 without employing a primer-tube.

Either the primer or anvil may receive the charge of fulminate, or both may be charged as indicated in Fig. 12.

Other modifications may be made in the forms and proportions of the parts within wide limits without departing from the invention, and parts may be used without the whole. The powder-cup may be variously formed to provide the required expansibility, and be secured in place in any approved manner, and the charge therein fired by any suitable primer and firing means.

The cup shown in Fig. 1 is designed for service with a normal charge of bulk powder of any standard make; the sharply tapered form shown in Figs. 10 and 12 is intended to serve with dense powders; in all cases the air imprisoned in the spaces between the exterior of the expansible cup and interior of the shell serves as an air cushion to absorb the shock of recoil, and such spaces should be proportioned to the quantity and character of the powder used in charging the shell.

I claim:—

1. In a cartridge, a base and shell, an expansible cup located adjacent to said base and within said shell and adapted to expand with the explosion of a charge of powder received in said cup.

2. In a cartridge, a base and shell, a conical cup located adjacent to said base and within said shell and adapted to expand with the explosion of a charge of powder received in said cup.

3. In a cartridge, a base and shell, a corrugated cup located adjacent to said base and within said shell and adapted to expand with the explosion of a charge of powder received in said cup.

4. In a cartridge, a base and shell, a corrugated cup secured to said base and having a cylindrical open end matching the interior of said shell and adapted to expand with the explosion of a charge of powder received in said cup.

5. In a cartridge, a base and shell, a conical cup secured to said base, having longitudinal corrugations, and a cylindrical open end matching the interior of said shell, and adapted to expand with the explosion of a charge of powder received in said cup.

6. In a cartridge, a closed base, a base-block, and a primer in said base-block, located adjacent to said closed base, said base-block being provided with an annular channel separated from the primer-receiving opening.

7. A base-block having an axial opening therethrough adapted to receive a primer in its rear face, a shell, a powder-cup within said shell and separated from the latter to provide an air-space exterior to said powder-cup, and means for securing said powder-cup to the front face of said base-block.

8. A base-block having an axial opening therethrough, a powder-cup having an aperture in its bottom, a primer-tube extending through said opening and aperture and securing said cup to said base-block, and a primer and anvil in said tube, all arranged to serve with the base and shell of a cartridge.

9. In a cartridge, a closed base, a shell, a base-block located within said shell and adjacent to said base and having an opening therethrough, a powder-cup having a bottom, a cylindrical open end matching the interior of said shell and corrugations between said cylindrical end and bottom, a primer-tube extending through said opening and said bottom and securing said cup to said base-block, and a primer and anvil in said tube.

In testimony that I claim the invention above set forth I affix my signature, in presence of two witnesses.

GOTTLOB E. LOEBLE.

Witnesses:

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