A. L. O. FAUCHON-VILLEPLÉE.

ELECTRIC APPARATUS FOR PROPELLING PROJECTILES.

APPLICATION FILED APR. 1, 1919.

1,422,427.

Patented July 11, 1922.

2 SHEETS—SHEET 1.

Fig. 1

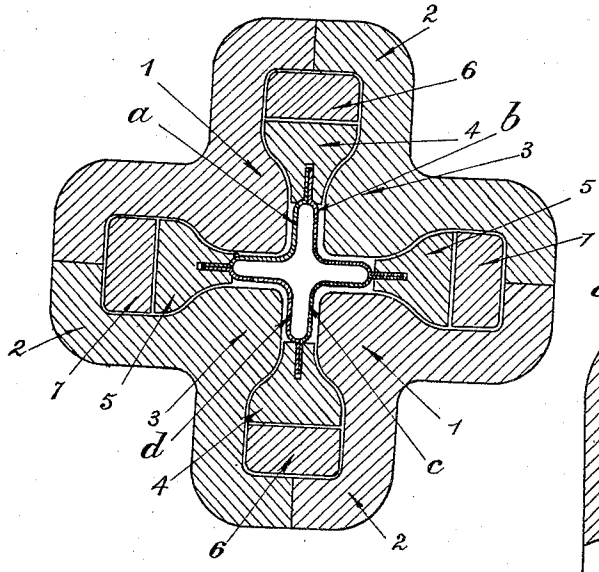


Fig. 3.

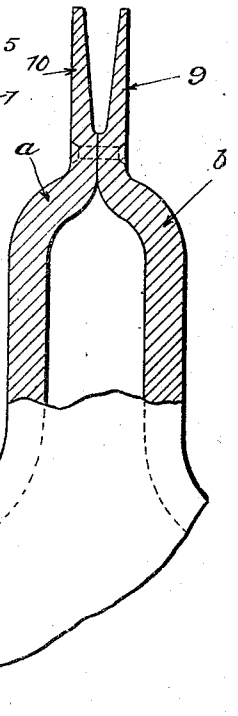
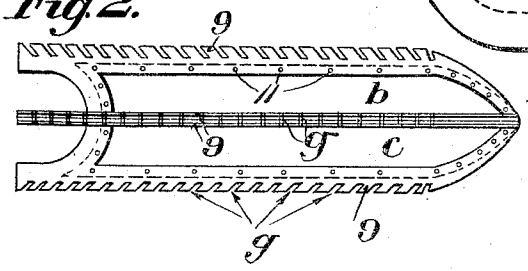


Fig. 2.



Inventor

André Louis Octave Fauchon-Villeplée

by Attorney

his Attorney

A. L. O. FAUCHON-VILLEPLÉE.

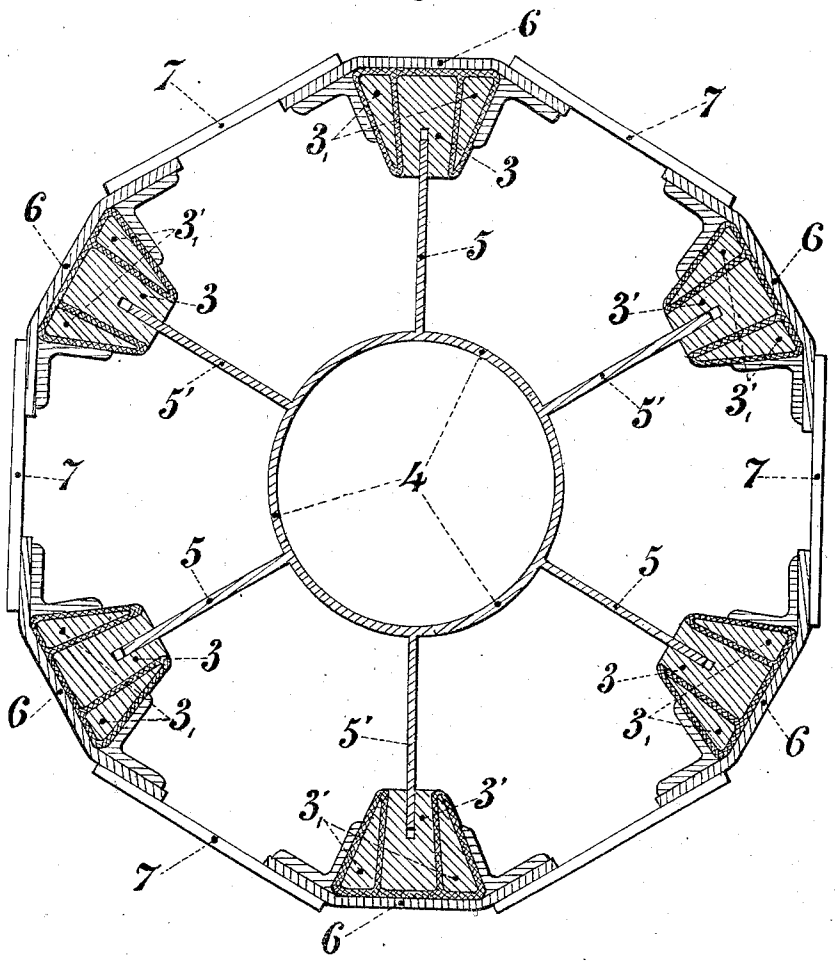
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2 SHEETS—SHEET 2.

Fig. 4



Inventor

André Louis Octave Fauchon-Villeplée

by Attorney

his Attorney

UNITED STATES PATENT OFFICE.

ANDRÉ LOUIS OCTAVE FAUCHON-VILLEPLÉE, OF PARIS, FRANCE.

ELECTRIC APPARATUS FOR PROPELLING PROJECTILES.

1,422,427. Specification of Letters Patent. Patented July 11, 1922.

Application filed April 1, 1919. Serial No. 286,799.

To all whom it may concern:

Be it known that I, ANDRÉ LOUIS OCTAVE FAUCHON-VILLEPLÉE, citizen of the Republic of France, residing at 2 Rue Meissonier, Paris, in the Republic of France, have invented new and useful Improvements in Electric Apparatus for Propelling Projectiles, of which the following is a specification.

I have described in my former United States Patent No. 1,370,200, an electric gun construction in which projectiles of any desired shape are thrown out by the direct action of a direct electric current which flows through the whole or a part of the projectile and is subjected to a field of electric forces.

In my co-pending application Ser. No. 286,798 filed April 1, 1919, I have more particularly described a gun construction using projectiles having a circular cross section and my present application relates to a gun construction based upon the same principle but using winged projectiles.

In the annexed drawings:

Fig. 1 is a cross section of an electric gun constructed in accordance with the present invention and of the shell used in said gun.

Fig. 2 is the side view of the shell.

Fig. 3 is a detail end view of the shell, partly in section, on a larger scale.

Fig. 4 is a cross section of a modification.

As shown in Fig. 1, the gun is so constructed that it may be used to throw out a hollow cross-shaped projectile provided with wings. The gun is composed of a magnetic circuit 1, 2, 3 with four poles, extending over the whole length of the gun. Rails 4—4 and 5—5, which convey the current and extend also over the whole length of the gun, are used at the same time for guiding the shell. Bars 6—6, 7—7 form the energizing windings for the magnetic circuit.

It is assumed in the drawings that the shell is connected in series with the inductors. The current supplied at the rear end to the two rails 4—4 in parallel flows through the shell, the two other rails 5—5 to the rear end, the bars 6 which are connected there to the rails 5, the bars 7 which are connected at the front end to the bars 6 and back by said bars 7 to the source of electric supply.

The shell is cross-shaped and provided with wings, which allows of reducing the magnetic gap and obtaining a better contact with the rails. The shell proper is composed of four sheet pieces a, b, c, d which are dished and assembled one to the other for instance by rivets 11 as shown in Fig. 2.

The outer edges 9 of said pieces, which form the wings, are thinned and provided with slots g so that the wings thus formed are slightly elastic and make a good contact with the rails. The contacting surfaces are machined, they might also be covered with copper plates for improving the contact.

The above shells have the advantage that they are of an easy construction. Moreover the resistance of the air to the passage of said shells is much less than to cylindrical shells, because for the same weight, the section of the projectile is much smaller than for a cylindrical shell, as it is possible to give a much greater length and an elongated form which prevents the eddies and vacuum which take place with ordinary cylindrical shells. Their construction allows also of giving them a very much lengthened shape and of arranging the same so that they will keep perfectly their direction in flight without any rotary movement. A rotary movement could however be imparted to them, if desired, by constructing the guns and the shells accordingly.

It is obvious that if the guns are provided with a greater number of poles the shells will have a corresponding number of wings.

Fig. 4 shows, as a modification, a gun construction based on the same principle, in which the shell is provided with six wings instead of four and is cylindrical instead of cross shaped. Moreover the magnetic circuit is omitted.

The rails 3, 3′ which act as current feeding means and as guides for the projectile and the winding bar 3_1, $3'_1$ are insulated from each other and mounted on a metallic frame 6, 7 suitably braced so as to have a sufficient rigidity in proportion to its length, the above bars being also insulated from that frame.

It will be seen from the above description that there are created, around each bundle of bars 3, 3_1, circular lines of force which pass through the wings 5 and 5′. Said lines of force being crossed perpendicularly by the current flowing through the wings 5, 5′ of the shell it results that the latter is propelled forwardly.

Naturally, the above described construction may be embodied in any kind of apparatus for propelling projectiles such as rifles,

machine-guns, guns, aerial torpedo-guns etc.

The projectile can be made of magnetic or nonmagnetic material. It may be tinned or not and provided with any even number of wings.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. An electric gun comprising in combination energizing bars adapted to create a field of electric forces extending over the whole length of the gun, a plurality of rails adapted to act as current feeding means and to guide in a direction at right angles to said field of forces, a projectile provided with an equal plurality of wings, said rail being provided with grooves in which said wings are adapted to slide, the rails and bars being arranged parallel to each other in groups which are located at diametrically opposite points around the longitudinal axis of the gun, and means for supporting the rails and bars.

2. An electric gun comprising in combination energizing bars adapted to create a field of electric forces extending over the whole length of the gun, a plurality of rails adapted to act as current feeding means and to guide in a direction at right angles to said field of forces, a projectile provided with an equal plurality of wings, said rails being provided with grooves in which said wings are adapted to slide, the rails and bars being arranged parallel to each other in groups which are located at diametrically opposite points around the longitudinal axis of the gun, and a magnetic frame extending over the whole length of the gun and adapted to support the rails and bars.

3. An electric gun comprising in combination energizing bars adapted to create a field of electric forces extending over the whole length of the gun, a plurality of rails adapted to act as current feeding means and to guide in a direction at right angles to said field of forces, a projectile provided with an equal plurality of wings, said rails being provided with grooves in which said wings are adapted to slide, the rails and bars being arranged parallel to each other in groups which are located at diametrically opposite points around the longitudinal axis of the gun, and a frame extending over the whole length of the gun and adapted to support the rails and bars, the energizing bars being arranged in each group on both sides of the guiding rails.

4. An electric gun comprising in combination: a winding adapted to create a field of electric forces, rails adapted to guide a winged projectile in a direction at right angles to the lines of forces of said field and to supply an electric current to said winged projectile, the wings and body of the projectile being made of conductive material and in electrical contact with each other, the body of the winged projectile being cross shaped.

In testimony whereof I have signed my name to this specification.

ANDRÉ LOUIS OCTAVE FAUCHON-VILLEPLÉE.