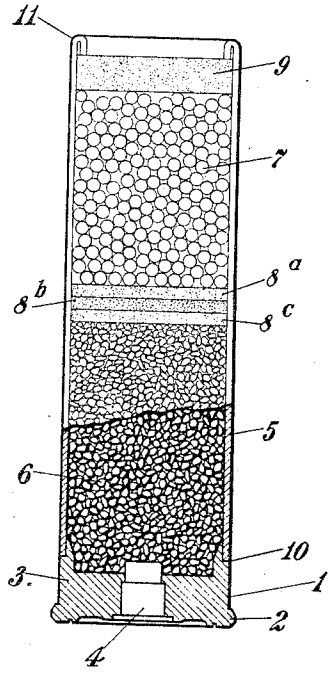
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A. F. DU PONT

SHELL

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Alexis Felix duPont, Inventor

By his attorney F.R.Squair

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UNITED STATES PATENT OFFICE.

ALEXIS FELIX DU PONT, OF CHRISTIANA HUNDRED, DELAWARE, ASSIGNOR TO E. I. DU PONT DE NEMOURS & COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

SHELL.

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This invention relates to ammunition and, more particularly, to shells, e. g. shot shells for sporting purposes.

Shells of the character indicated have heretofore been made of a material which concealed the charge, for example heavy paper. While for general purposes an opaque shell is quite satisfactory; yet for special purposes such as advertising, special appeal to certain customers, and the like, it is desirable that the contents of the shell be exposed to view. Furthermore, paper shells are liable to swell from dampness giving rise to evident difficulties. I have devised a shell which is transparent, whereby the contents thereof are visible, and is at the same time moisture proof, and has various other advantages as will appear hereinafter. It is the object of the invention to provide such a shell, and to also improve generally upon devices of the character indicated. To these ends the invention consists in the various matters hereinafter described and claimed.

In the accompanying drawing the figure is a side elevation, partly in section of a shot shell embodying my invention. Without restricting the invention thereto, I describe it with more particular reference to the illustrated embodiment.

The illustrated shell comprises: the base member designated generally as 1, and including the base proper 2, and the base wad 3, the two being preferably, and as illustrated, integral; the battery cap 4 carried by the base member and carrying, as is usual, the primer (not shown); the shell wall 5; the propellant, e. g. smokeless powder 6; the slot charge 7; the wads 8^a, 8^b, 8^c, and the shot wad 9. The details of the shell, such as the wads, propellant, shot, and the like, may be of any suitable character as understood by those skilled in the ammunition art, the invention not relating to such features. While in the present instance the shot charge is shown as composed of shot, it will be understood that it may be one or more projectile bodies of any desired character.

In accordance with the invention, the side wall portion 5, and preferably the entire case or shell body e. g. the side wall 5, and base member 1, is made from a transparent non-fragile, somewhat resilient, waterproof material capable of being drawn, molded and so on, as called for in the making of the case. That is to say, it is preferably made from cellulose ester plastic, as cellulose nitrate (pyroxylin) plastic or cellulose acetate plastic, of the transparent type. The specific formalæ of these materials may be any of the suitable ones, giving, as understood in the cellulose ester plastic arts, the characteristics indicated, such plastics as pyralin, celluloid, acetyl cellulose plastic and so on being of course already known in the arts.

The case or shell body may be made in any desirable manner. In making the illustrated shell, the base member 1 may be made by die pressing, or by turning from solid stock, and the side wall member made from tube stock stretched and straightened to dimension upon a mandrel and cut off to proper length. As here illustrated, the base member 1 is formed with a shoulder 10 thereabout upon which the side wall member is closely seated and secured in place as by a suitable cement. Such cement may be composed of a small quantity of cellulose ester such as used for the shell body dissolved in a suitable low-boiling solvent for the same, as understood in the cellulose ester arts. The battery cap 4 may be given a close friction fit in the base member 1 and also cemented. The loading of the case having been completed and the top shot wad placed, the rim 11 may be turned over; for example in a heated crimper, to hold the wad in place.

It will be seen that a shell of the present character has the great advantage that the load can be distinctly seen, wherefore the shell makes a distinct appeal as an advertising medium. Furthermore, the customer can inspect the charge and see the character thereof and the manner in which the shell is loaded. Also, while possessing advantages of this sort, the shell has the further advantage, among others, that it is waterproof and so will not swell, or have other disadvantages of the paper shell.

The dimensions of the shell will be of course those required to adapt it for the particular arm in which it is to be used; in a shell of pyroxlyin plastic about $2\frac{13}{16}$ inches overall and having a side wall portion about $2\frac{3}{8}$ inches long and with an outside diam-

eter of about .815 inch, I have used for the side wall portion a thickness of about .033 inch.

While I have more particularly described the invention as embodied in a shot shell, it will be understood that it may be embodied in other cartridges or shells of the various types used for small arms.

I claim:

1. As an article of manufacture, a shot shell, to comprise propellant and shot charge, said shell having its side wall of transparent cellulose ester plastic for a length exposing both propellant and shot charge.

2. As an article of manufacture, a small arm shell, to comprise propellant and shot charge, said shell having a side wall composed, throughout a length sufficient to expose both propellant and shot charge, of a one-layer thin wall of transparent cellulose ester plastic directly and immediately receiving the propellant and shot charge.

3. As an article of manufacture, a shot shell, to comprise propellant and shot charge, said shell having its base wad, and substantially its entire case including the base, of transparent cellulose ester plastic, thereby to expose substantially the entire propellant and shot charge, both at its sides and its bottom.

4. As an article of manufacture, a shot shell, to comprise propellant and shot charge, said shell having its base wad, and substantially its entire case including the base, of transparent pyroxylin plastic, thereby to expose substantially the entire propellant and shot charge, both at its sides and its bottom.

5. As an article of manufacture, a small arm shell having a case comprising a base member integrally presenting the base proper and the base wad and said base wad presenting a peripherial shoulder, and a tube-like side wall member fitted upon and attached to said shoulder, said side wall portion and said base member being of non-fragile transparent material.

In testimony whereof I affix my signature.

ALEXIS FELIX DU PONT.