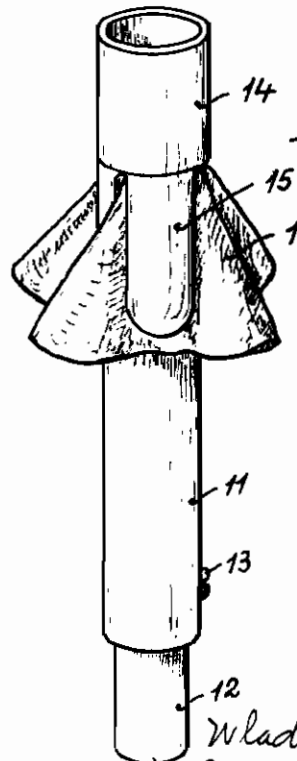
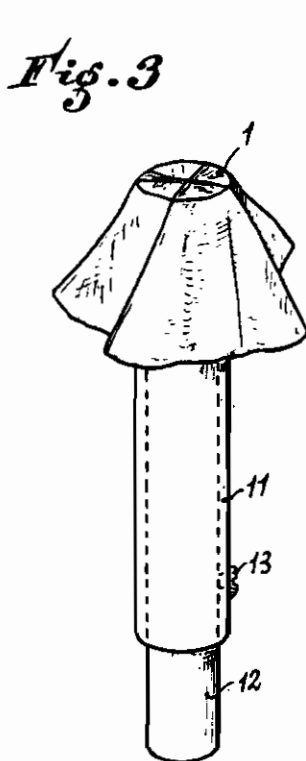
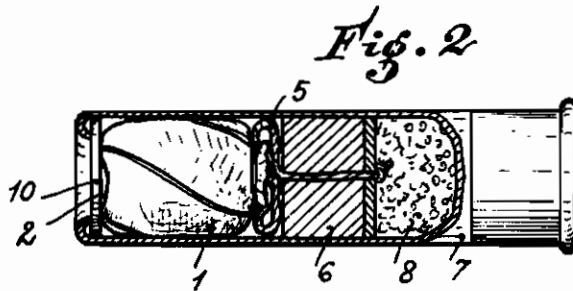
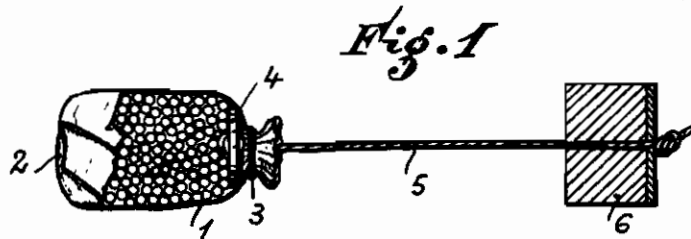


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METHOD OF CONSTRUCTION THEREOF
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2 Sheets-Sheet 1



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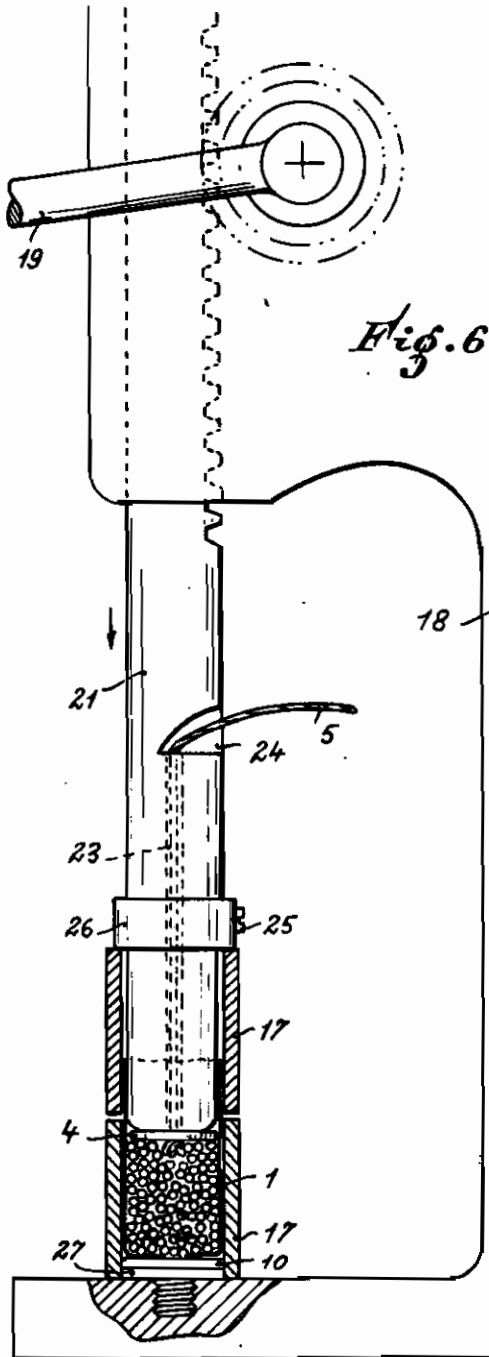


Fig. 6

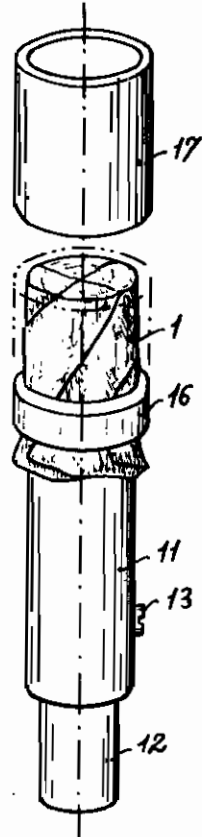


Fig. 5

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CONCENTRATING DEVICE FOR CARTRIDGES AND METHOD OF CONSTRUCTION THERE- OF

Wladimir de Garkovenko, Vallauris, France;
vested in the Alien Property Custodian

Application filed May 18, 1940

The present invention relates to concentrating devices for the shot of shot-gun cartridges of the kind in which a casing for the shot is connected by a string to a pad or pads.

In such a device, which acts partly as a tracer cartridge and partly as a concentrator, the weight and volume have necessitated reducing the charge of shot and powder which considerably modifies the ballistic results. The rubber casing used varies with the temperature and weather which modify its physical properties so that the retarder made of elastic material cannot resist air pressure which causes great variation in the retarding action on which the efficiency depends whilst moreover no means are proposed for suitably regulating the device.

The present invention provides a novel concentrating device which permits of obtaining high speed cartridges giving very close dispersion of shot, the density of dispersion being variable. In this way there is obtained a result which was hitherto unattainable.

The chief feature of the device resides in the combination with a fairly thick cylindrical wad of a fabric casing of light weight and volume containing the charge of shot, and to which the cylindrical wad is connected by a string so that it is caused to play the part of a retarding stabiliser which separates the casing from its contents at a pre-determined distance from the mouth of the barrel, the shot having up till then been kept closely assembled, thus giving a high speed cartridge with close dispersion of shot which dispersion can be varied as required.

Another feature resides in that the distance at which the separation of the casing and shot due to the wad, can be adjusted by varying the surface, the weight, and the density thereof so that it fills the role of regulating the discharge of the concentrating device.

These features will be brought out clearly from the following description with reference to the accompanying drawing, which shows:

Fig. 1 the concentrating device constructed according to the invention;

Fig. 2 the same in position in the cartridge;

Fig. 3 the supporting mandrel, with socket, used for the shaping of the casing;

Fig. 4 the shaping device in action;

Fig. 5 another phase in the shaping of the casing;

Fig. 6 the machine permitting the ramming of the charge of shot and the binding of the casing;

The concentrating device in conformity with the invention consists first of all of a casing 1

(Fig. 1) of thin, solid and resilient material which is preferably a bad conductor of heat, for example cotton fabric, adapted to contain the charge of shot for the cartridge.

This casing is in the form of a small cylindrical sack pierced with an opening 2 of circular or other shape at its end.

The neck of the sack is tied by a string 3 so as to enclose a washer 4 of light, strong material such as cardboard, which permits of connecting the casing, by means of a string 5 to a suitable wad 6 completing the concentrating device.

This latter is inserted in a cartridge in the manner shown at Fig. 2.

In this figure, the cartridge 7 has a charge of powder 8, the wad 6 and the casing 1 containing the charge of lead shot 9. A disc 10 of cardboard closes the cartridge in the ordinary manner.

The effect of the concentrating device is as follows:

At the moment of firing, the wad 6, connected to the casing 1, by the string 5, acts during its passage through the barrel of the gun like an ordinary wad. In leaving the mouth thereof it follows behind the casing 1 at a distance equal to the length of the string; it then begins to act as a stabiliser and a retarder.

At a certain distance from the mouth it forces the casing 1 to release the charge of shot forwardly and thus causes a lag in the dispersion of the latter.

The distance at which the shot leaves the casing 1 can be modified at will by taking into consideration not only the strength of the casing retaining the shot due to the tension of the casing itself and the diameter of the opening in the end of such casing, but also due to the surface, density and weight of the wad-retarder and consequently also on the speed and resistance with which the wad follows the casing.

It suffices therefore to increase the density of the wad and consequently its speed to retard the release of the shot from the casing and improve the density of dispersion.

By increasing the surface of the wad and by diminishing its density, the wad loses speed more rapidly and will tear off the casing a little sooner which will increase the dispersion of the shot.

The concentrating device is applicable to most kinds of fire-arms.

The softness of the casing 1 permits of using the concentrator even in choke-bore barrels.

Further the lightness of the casing and the small volume which it occupies in the cartridge

permits of using the normal charge and calibration sockets.

Finally, by reason of its light weight, the casing allows of the production of very high speed shot cartridges and to obtain a very close dispersion which was impossible hitherto.

Thus, for example, with a calibre of 12, a charge of powder T of 2 gr. 80 and a charge of shot of 30 grs. there is obtained an initial speed of 548 meters and a grouping of 88% at 36.50 m. from the mouth of the barrel and with shot No. 6 Paris and that at normal pressure.

The construction of the concentrating device is obtained in the following manner:

First cut out, from the material selected to form the casing 1 (cotton fabric) four discs of appropriate diameter.

At the centre of said discs, the fabric is coated by means of a rubber adhesive, varnish or other suitable material which gives homogeneity to the threads and prevents them subsequently fraying when the opening 2 is formed therein.

Next each disc is folded along two perpendicular lines inclined at about 45 degrees to the warp and weft threads of the fabric.

The disc is then placed on the supporting mandrel 11 (Fig. 3) so as to form four wings of which the above mentioned folds form the edges.

In the mandrel 11 slides a plunger 12 the free end of which has as diameter that of the opening 2 to be formed in the casing 1. A screw 13 limits the stroke of the plunger and also prevents it leaving the mandrel.

The casing 1 is then pressed around the mandrel by a shaping tube 14 (Fig. 4) of thin metal having four claws 15 in such a manner that the wings of the casing engage between the latter.

The wings of the casing are flattened by winding the shaping tube in a spiral direction on the mandrel 11.

The shaper 14 is then removed and whilst holding the casing tightly in its wound up position, a ring 16 (Fig. 5) is slid over it, the internal diameter of said ring 16 varying according to the pressure to be applied to the fabric of the casing.

A guide tube 17 of which the internal diameter is equal to the calibre of the cartridge and in which has previously been introduced the cardboard closing disc 10 (Fig. 1), is then slid over the casing.

The guide tube 17 is pushed down until it contacts with the ring 16. The edge of the tube 17 is pressed against a suitable metal plate and the support 12 is pushed down with a hammer blow

so that it cuts an opening 2 in the casing 1, without cutting the cardboard disc 10, this being obtained by suitable adjustment of the screw 13.

The ring 16 is then slid down to abut against screw 13 and the tube 17 is removed with the casing from the mandrel 11, whereafter the charge of shot is filled into the casing 1.

The tube 17, with the casing 1, is then brought beneath a packing machine 18 (Fig. 6) comprising a lever 19 operating a pinion wheel 20 engaging a rack 22 formed on a rod 21 which latter can thus be moved up and down.

The rod 21 has a central passage 23 which can be reached from the upper part of the mandrel through an opening 24.

On the rod 21 is secured a ring 26 by means of a screw 25.

Finally on the base of the machine is screwed or otherwise suitably secured, a metal stud 27.

Through the passage 23 in rod 21 is passed a string 5 which comes out at the bottom of the rod 1 to permit of fitting the cardboard disc 4 in position and holding it in place by a knot.

The tube 17 rests on the machine around the stud 27 on which the cardboard disc 10 rests.

The rod 21 being raised to its upper position, a second tube 17 is fitted above the former and likewise surrounds the casing 1. The rod 21 is lowered and after sliding the upper tube 17 upwards thereon the casing is pulled taut above the disc 4 by means of a string 3 passed through the gap left between the two tubes 17.

The rod 21 is raised again and the lower tube 17 containing the casing 1 loaded with the charge of shot 8 as in Fig. 1, is removed from the machine. The string 5 having been cut to a suitable length, the free end is passed with a needle, through the wad 8 and knotted. This completes the concentrating device which is placed in position in the cartridge as shown in Fig. 2 and closed by any usual machine for this purpose.

It is obvious that modifications in details can be embodied in the device above described without thereby exceeding the scope of the invention defined in the appended claims.

For instance, stamped plugs could be fitted to the packing to vary, in suitable predetermined proportions, the density and weight of the latter.

Figs. 3 to 6 serve only to assist in understanding the manner of carrying the invention into effect and do not form part of the invention per se.

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