F. O. HOAGLAND.

CARTRIDGE SHELL.

APPLICATION FILED FEB. 24, 1914.

1,103,203. Patented July 14, 1914.

Fig. 1

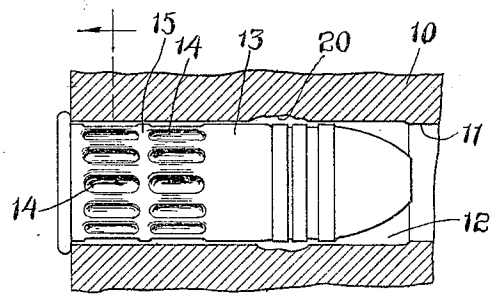


Fig. 2

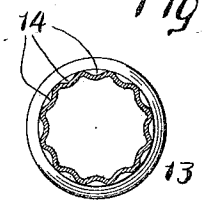


Fig. 3

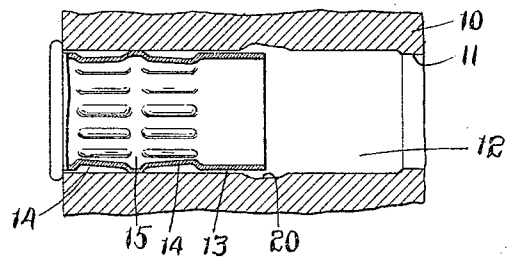


Fig. 4

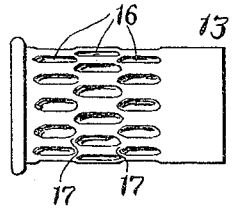
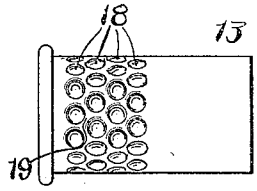


Fig. 5



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CARTRIDGE-SHELL.

1,103,203. Specification of Letters Patent. Patented July 14, 1914.

Application filed February 24, 1914. Serial No. 820,620.

To all whom it may concern:

Be it known that I, FRANK O. HOAGLAND, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Cartridge-Shells, of which the following is a specification.

This invention has for its object to produce a rim fire cartridge shell so constructed as to provide an efficient gas check without elongation of the shell and without expansion of the mouth of the shell. It is of course well understood that all properly constructed cartridge shells are adapted to be expanded in the chamber of the gun, by the pressure generated at the instant of the explosion, sufficiently to prevent the gases of the explosion from escaping rearwardly. Heretofore, so far as I am aware, this gas check has been produced by expansion of the mouth of the shell against the chamber of the gun. It is furthermore well understood that unless guns are properly cared for, and sometimes in spite of care, erosion of the wall of the chamber takes place near the mouth of the shell where the gases of the explosion escape into the chamber. This is especially likely to take place in shooting galleries, where the guns are not always well cared for, and results in the mouths of the shells being expanded into the eroded portion of the chamber and locked there so that they can only be extracted with great difficulty. Furthermore, the gas check is not effective owing to irregularities in the wall of the chamber so that in some cases the hot gases of the explosion will blow back into the face of the shooter. These objections I wholly overcome and produce shells which provide an effective check against the rearward escape of gases, which will not stick in the chambers of guns and in which danger of the shells cracking, by stretching and thus weakening the metal near the head, is eliminated. These results I effect by providing near the heads of the shells a plurality of series of depressions which stretch and thus weaken the metal thereof, leaving however, between contiguous series of depressions, expanding rings which, as the metal on each side is weakened by stretching, are expanded by the explosion and forced into contact with the wall of the chamber back of the place where erosion ordinarily takes place.

In the accompanying drawing forming part of this specification, Figure 1 is a view partly in elevation and partly in section showing the rear end of a rifle barrel with a cartridge therein; Fig. 2 a section of the cartridge shell on the line indicated by 2 in Fig. 1, looking in the direction of the arrow; Fig. 3 a view similar to Fig. 1 after the cartridge has been fired, showing the weakened portion of the shell expanded against the wall of the chamber back of an erosion therein, and Figs. 4 and 5 are elevations of cartridge shells illustrating slightly variant modes in which I have carried the invention into effect.

10 denotes a rifle barrel, 11 the bore, 12 the chamber and 13 my novel cartridge shell.

The essential feature of the invention is the ring or rings made expansible by stretching and weakening the metal on opposite sides thereof, the effect of which is, when a cartridge embodying the invention is fired to cause the ring to be forced into contact with the wall of the chamber.

20 indicates where an erosion of the chamber has taken place through the escape of gases at the mouths of shells. This erosion is greatest contiguous to the mouth of the shell and extends backward and forward from the location of the mouth of the shell but does not ordinarily extend backward more than a third of the length of the shell, leaving the rear portion of the wall of the chamber in good condition, so that the engagement therewith of the expanding ring will provide an efficient gas check, and obviate all danger from the rearward escape of gases. The stretching of the wall of the shell may be effected in any suitable manner, as by forming grooves, corrugations or other depressions therein.

In the form illustrated in Figs. 1, 2 and 3, I have shown a cartridge shell in which the desired result is effected by the formation in the head end of the shell of two contiguous series of elongated grooves, indicated by 14, having between them a ring 15 of unstretched metal which is made expansible by the stretching of the metal on opposite sides

thereof, so that when the explosion takes place the ring is expanded and forced outward into contact with the wall of the chamber back of the eroded portion, if there has been any erosion. As the stretched portions of the shell contiguous to the ring yield much more readily than does the unstretched mouth of the shell, it follows that the mouth of the shell will not be stretched at all, while at the same time an efficient gas check is provided near the head of the shell and easy extraction of the shell is insured.

The form illustrated in Fig. 4 differs in that I have shown three series of grooves or depressions, indicated by 16, which are placed in staggered relation, the ends lapping past each other, and leaving a sinuous expanding ring 17 between the ends of contiguous series of grooves. These sinuous rings of the metal of the shell, while not themselves stretched, are weakened by the stretching of contiguous metal on both sides, so that they will act in the same manner as the expanding ring in the other form and be forced against the wall of the chamber when the explosion takes place and form an efficient gas check and insure easy extraction of the shell.

The form illustrated in Fig. 5 differs in that instead of series of elongated grooves, I have provided a plurality of series of round depressions, indicated by 18, leaving sinuous expanding rings 19 of unstretched metal between them.

The operation of my novel cartridge shell when the explosion takes place will be readily understood from Fig. 2 in connection with the description already given. The ring or rings are expanded into contact with the wall of the chamber back of the eroded portion, if there has been erosion, and thus provide an efficient gas check and insure easy extraction of the shell.

Having thus described my invention I claim:—

1. A cartridge shell having its rear portion forward of the head weakened by means of series of depressions therein, leaving an expanding ring between the series of depressions, substantially as described, for the purpose specified.

2. A cartridge shell having the metal of the rear portion thereof forward of the head stretched by forming series of depressions therein, leaving an expanding ring between the stretched portions.

3. A cartridge shell having the metal thereof stretched by forming series of grooves therein in the direction of its length, leaving an expanding ring between the series of grooves.

4. A cartridge shell having the metal thereof stretched by forming a plurality of series of grooves therein in the direction of its length, said series of grooves being placed in staggered relation with their contiguous ends overlapping, leaving sinuous expanding rings between the series of depressions.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK O. HOAGLAND.

Witnesses:
WILLIAM M. THOMAS,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."