No. 651,558. Patented June 12, 1900.

T. H. RYLANDS.

CARTRIDGE SHELL.

(Application filed Dec. 28, 1899.)

(No Model.)

Fig. 1.

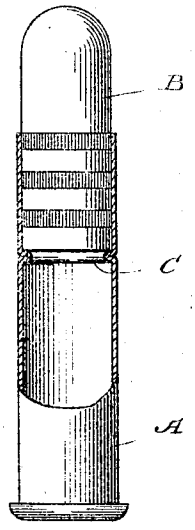
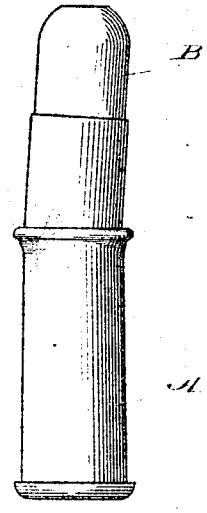


Fig. 2.



WITNESSES

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CARTRIDGE-SHELL.

SPECIFICATION forming part of Letters Patent No. 651,558, dated June 12, 1900.

Application filed December 23, 1899. Serial No. 741,781. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. RYLANDS, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Cartridge-Shell, of which the following is a specification.

My invention has for its object to provide a cartridge-shell that may be made very cheaply, that will fit a gun chambered for black-powder cartridges, but which when loaded with "smokeless," so called, or nitrated powder may be handled and used with perfect safety.

It is of course well understood by those familiar with the art, first, that all of the smokeless powders are very much less bulky than the ordinary black powders, and, second, that in all guns adapted to receive black-powder cartridges the base of the bore—that is, the portion which receives the powder-chamber of the cartridge—has a diameter not less than the diameter of the bullet and frequently has a diameter greater than the diameter of the bullet.

In loading shells with black powder the charge of powder frequently fills the shell nearly full and the bullet is crowded down upon it with sufficient force to compress the powder, the powder thus forming a backing for the bullet, so that it cannot be forced farther into the shell, and, furthermore, even if the bullet should be forced farther into a shell loaded with black powder no harm would be done, owing to the relative slowness with which the gases are formed when combustion of the powder takes place. If, however, these same shells are loaded with smokeless powder, the powder-chambers of the shells are not more than one-fourth to one-half filled with powder. It is furthermore absolutely necessary in using smokeless powder, owing to the relative quickness with which the gases are formed when combustion of the powder takes place, that there should not be the slightest compression or condensation of the powder, it being as a matter of fact considered unsafe to compress smokeless powder in the shells to the slightest extent, as it is quite probable that smokeless powder if compressed in a cartridge-shell will burst the gun when fired. It has furthermore been demonstrated that in transporting and handling ordinary cartridges loaded with smokeless powder, and especially in rapid firing in action, there is danger of the bullets being forced farther into the shells and also of a cartridge becoming jammed in the gun owing to the excitement of rapid loading in action. It is therefore extremely desirable that cartridge-shells be provided which may be loaded with either a large or a small charge of black powder or with smokeless powder and which when loaded with smokeless powder shall be absolutely safe under all the ordinary and extraordinary conditions of use, even during the excitement of rapid firing in action, and which, moreover, will enable the shells when used in practice firing or in trenches or on shipboard to be reloaded. By that I mean to provide a cartridge that shall be perfectly safe if it can be put in a gun and if rendered unsafe shall be rendered so in such a manner that it cannot be put into a gun, and thus can do no harm.

With the above conditions in view I have invented and produced a cartridge-shell provided with an abrupt internal shoulder which forms a positive seat for the base of the bullet. I am, of course, aware that it is and long has been common to make grooves in cartridge-shells, some of which are pressed into the bullets and some of which are at the base of the bullets; but none of these grooves, however, have amounted to an abrupt shoulder or could possibly be made to serve as a positive stop for the bullet, for the reason that the end of the bullet, under pressure, is liable to act on the inclined or beveled side of the groove to force said wall outward, and, moreover, should the bullet be forced past any of the grooves heretofore made in shells the exterior configuration of the cartridge would not be changed to such an extent as to prevent it from being put in a gun. This grave danger of the bullet being driven inward upon the powder when subjected to the extraordinary conditions of use has been the cause of serious inconvenience and expense, as it has prevented the use of smokeless-powder cartridges in guns chambered for black-powder cartridges. My invention, therefore, in brief

has for its object to do away with this uncertainty and danger and to provide a cartridge-shell that may be loaded with either a large or a small charge of black or smokeless powder and will be perfectly safe when loaded with either powder under the most extraordinary conditions of use, for the reason that the bullet cannot be driven inward to any appreciable extent unless an amount of power is applied sufficient to crush the shell longitudinally, in which event its external contour will be changed to such an extent that it cannot be put into a gun.

In the accompanying drawings, forming part of this specification, Figure 1 is an elevation of my novel cartridge-shell, a portion of the shell being broken away to show the manner in which the bullet is seated upon the shoulder; and Fig. 2 is a view illustrating the effect upon a cartridge of applying sufficient pressure to the bullet to drive it inward and showing how the external contour of the shell is changed, thereby making it impossible to insert the cartridge in a gun.

A denotes a cartridge-shell; B, a bullet, and C an abrupt shoulder extending inward from the wall of the shell and consisting of two thicknesses of metal in contact with each other and forming a positive stop for the bullet to abut against, said stop projecting inward substantially at a right angle to the longitudinal center of the shell. The special manner in which this shoulder is made is not of the essence of my invention. In practice I have found it a simple and inexpensive way to make this shoulder to roll a depression into the shell and then to close the sides of the depression upon each other, thus forming within the shell an absolutely-rigid shoulder consisting of two plies of the metal of the shell.

Having thus described my invention I claim—

1. A cartridge-shell having on its inner periphery an abrupt annular shoulder consisting of two thicknesses of metal in contact with each other and forming a positive stop against inward movement of the bullet.

2. A cartridge-shell having on its inner periphery an abrupt annular shoulder consisting of two plies or thicknesses of the metal of the shell in contact with each other, for the purpose specified.

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

THOMAS H. RYLANDS.

Witnesses:

GEO. T. PERCY,

ALMON C. BARRELL, 2d.