

# UNITED STATES PATENT OFFICE.

MAX VON FÖRSTER, OF BERLIN, GERMANY.

## PROCESS OF MAKING SMOKELESS POWDER.

SPECIFICATION forming part of Letters Patent No. 559,638, dated May 5, 1896.

Application filed February 28, 1894. Serial No. 501,762. (No specimens.)

*To all whom it may concern:*

Be it known that I, MAX VON FÖRSTER, a subject of the King of Prussia, Emperor of Germany, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in the Manufacture of Smokeless Powder, of which the following is a specification.

My invention has reference to the production of a very bulky smokeless powder, and has for its object to prevent overcharging of the firearm when a nitropowder is substituted in place of ordinary gunpowder.

Nitropowders, when made in flake form, have heretofore been gelatinized to the highest degree, and in view of the nature of the subsequent process of manufacture possess a firm homogeneous structure and present a straight smooth surface. Consequently when such nitropowders are filled into cartridge-shells they pack closely together and the powder occupies a comparatively small space. The sporting-arms now in use are designed for ordinary gunpowder, and the use of nitropowders is attended by the danger of overloading the cartridge. According to my present invention I obviate this danger by providing a powder in which the flakes are more bulky than heretofore, and have imparted thereto a corrugated rough surface. Consequently they occupy a greater space for a given weight than flakes of firm structure and straight smooth surfaces. The greater volume materially diminishes the explosive force and induces uniform combustion. The increased bulk of the flakes and roughness of surface are obtained by the use of incompletely gelatinized nitrocellulose. Any known method for incompletely gelatinizing the nitrocellulose may be employed. For instance, highly-nitrated cellulose (collodion-powder) is mixed with feebly-nitrated cellulose (collodion-cotton) in the presence

of a solvent, such as alcohol and sulfuric ether, which completely dissolves the feebly-nitrated cellulose, but the highly-nitrated cellulose only so far as feebly-nitrated cellulose is present therein.

In carrying out my improved process in practice I proceed as follows: A powder paste containing twenty per cent. of highly-nitrated collodion (collodion-powder) is kneaded in the presence of a solvent of the collodion-cotton, the same consisting of sixty-six parts of sulfuric ether and thirty-four parts of alcohol. The mass is then rolled into bands having a thickness of about 0.1 millimeter. These bands are then cut into flakes having a large surface when compared to their thickness—say 1.8 millimeters by 1.8 millimeters. These flakes are then dried as rapidly as possible.

In view of the small thickness of the flakes the solvent vaporizes very rapidly and completely and the flakes become corrugated, while, as before stated, the surfaces are rough.

What I claim as new is—

The herein-described process for the production of flakes of smokeless powder, having a corrugated or wavy surface, consisting in first preparing a paste of incompletely-gelatinized nitrocellulose, then rolling or otherwise forming the paste into thin bands, then cutting these bands into flakes, and, finally, rapidly drying the flakes, whereby the latter are caused to dry in a corrugated or wavy form with rough surfaces.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAX VON FÖRSTER.

Witnesses:

FRIEDRICH CARL GLASER,  
GUSTAV HÜLSMANN.