ABSTRACT OF THE DISCLOSURE

A gun barrel with rifling of at least two different depths which results in a more effective sealing of the propellant gases behind the projectile to impart a greater driving force to the latter, and which also prevents the escape of the hot gases past the projectile which causes the erosion of the barrel with a consequent loss in accuracy, as well as a reduction in the effective service life thereof. The different heights of the lands alternating with the grooves may be obtained in several ways, for example, by forming the barrel of uniform diameter, with the diameters of the land surfaces being different; by the diameter of the land surfaces being uniform with the diameters of the grooves in the barrel varying, or both the diameter of the land surfaces and that of the grooves not being constant.

It is the object of the present invention to provide a gun barrel with rifling therein in which the lands which alternate with the grooves are of two or more heights.

Before the development of the modern manufacturing methods the rifling of the barrel was made by cutting, in which case the tool problems dictated their own restrictions with regard to the form of rifling. The most common barrel was then the one with four grooves, in which the lands were alike and usually over 0.1 mm. high.

The new method of hammering and the so-called button rifling gives greater freedom in the production of the inner form of the barrel. It is now possible to manufacture barrels with as many as over twenty riflings, in which the heights of the lands are small, even less than 0.05 mm. It has, however, been noticed that in such micro-groove barrels the bullet cannot quite fill the grooves in the barrel and the hot gases escaping past the bullet cause erosion, especially at the rear part of the barrel, at the throat and in the part behind it. This leads to a deteriorated accuracy of the barrel when the throat moves forward, and barrel life is therefore reduced.

In accordance with the present invention, a better barrel than before can be achieved as far as the accuracy and service life are concerned. This may be attributed to a stepped form of rifling which is used in which there are grooves or lands of at least two depths, which extend continuously along the length of the barrel in non-intersecting relation.

It is the object of the invention to provide a gun barrel having a long service life and one which is capable of functioning more accurately than similar devices known heretofore.

Other objects and purposes will appear from the detailed description of the invention taken in conjunction with the accompanying drawing illustrating in cross-section one embodiment of the invention to attain an improved barrel with stepped rifling.

As shown in the drawing, the diameter of the barrel, designated by reference numeral 1, at the base of the grooves, is constant. The diameter 2 between the lands of shallow depth is greater than the diameter 3 between the lands of greater depth which alternate with the lands of shallow depth. The flank angle 5 of the lands are constant and delineate the width 4 of the lands which alternate with the grooves in the barrel. The height of the lands may, for example, 0.03 mm. and 0.06 mm.

The different heights of the lands may also be obtained by angling the circumferrential surfaces of the lands have a uniform diameter while the grooves are of different depth. Also, neither the lands nor the alternating grooves need be on constant diameters, respectively.

With a barrel conforming with this invention, a distinctly better accuracy has been achieved in tests compared to the barrel models known of old. Furthermore, it has been noticed that the bullet fills up the barrel well so that gas leaks causing erosion are not found in harmful degree.

The number of grooves and intermediate lands may be varied. Thus, instead of a barrel with eight grooves as shown in the drawing, one with six grooves having the following dimensions has been found to be very effective for use with a .22 caliber bullet designated Kal. 5.6 x 39:

Diameter 1—5.59 ± 0.025 mm. = 220 ± 0.001 inch
Diameter 2—5.53 ± 0.025 mm. = 217.7 ± 0.001 inch
Diameter 3—5.45 ± 0.025 mm. = 214.6 ± 0.001 inch
Width 4—0.9 ± 0.05 mm. = 0.0354 ± 0.002 inch

The twist of the rifling of the barrel in this example may be 425 mm. or 1634 inches.

While I have described my invention as embodied in a specific form and as operating in a specific manner for purposes of illustration, it should be understood that I do not limit my invention thereto, since various modifications will suggest themselves to those skilled in the art, without departing from the spirit of my invention, the scope of which is set forth in the annexed claims.

1. A gun barrel with rifling therein having a plurality of independent lands of at least two heights extending continuously along the length of the barrel in non-intersecting relation, said lands alternating with the grooves therebetween.

2. A device as set forth in claim 1, wherein the circumferential surfaces of the lands have a uniform diameter.

3. A device as set forth in claim 1, wherein the diameter of the grooves alternating with the lands are of uniform diameter and the diameters of the land surfaces are different.

4. A device as set forth in claim 1, wherein neither the circumferential surfaces of the lands nor the diameter of the barrel at the bases of the grooves are of constant diameter.

5. A device as set forth in claim 3, wherein the heights of the alternating lands are approximately 0.03 mm. and 0.06 mm.

References Cited

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