

Cartridge Ammunition

The invention relates to a cartridge ammunition consisting of a projectile and a cartridge shell receiving it according to the preamble of claim 1.

Such a cartridge ammunition is used as a live ammunition or as a practice ammunition, preferably in connection with automatic firearms and in particular automatic guns of medium caliber of about 40 mm. For this purpose, the cartridge ammunition is magazined in a belt that, customarily, is guided in the upper portion of the cartridge shell, which faces the projectile. In its bottom the cartridge shell has a flange slightly radially projecting beyond the circumference of the projectile, which forms the bottom of the cartridge ammunition.

For the shooting of the projectile the belt is pushed into the lock of the automatic firearm, and, for inserting the cartridge ammunition into the barrel of the automatic firearm, two retaining claws of an unbelting means of the lock customarily encompass the bottom flange of the cartridge shell and, first of all, abruptly pull the cartridge ammunition with the lock towards the rear out of the belt and then transfer it into the barrel of the weapon. During the unbelting of the ammunition the bottom flange of the cartridge shell is mechanically loaded to a very great extent on account of the shearing force occurring due to this. In some cases it happens that parts of the radial bottom flange of the cartridge shell are torn off. Thus, the

cartridge is no longer held in the lock and also not further transported.

Then a perfect function of the automatic firearm is no longer given.

It was attempted to solve this problem by increasing the thickness and/or the thickness of material of the bottom flange and/or by selecting a stronger material for the bottom flange. This certainly resulted in improvements, but has its limits, since, construction-related, the dimensions of the individual parts of the cartridge ammunition are virtually determined by standards. Moreover, such measures increase the price for the thicker or stronger material and the additional processing costs.

The invention is based on the object of indicating a cartridge ammunition of the type in question, in which the shearing off of the edge of the bottom flange of the cartridge shell, which projects beyond the circumference of the projectile is prevented by means of a simple measure.

According to the invention this object is solved by the features of claim 1.

Accordingly, one or several recesses are provided in the bottom flange of the cartridge shell at least in the area of the retaining claws of the unbelting means, with which the thickness of the bottom is reduced there to such an extent that the bottom flange can be bent there to a greater extent, i.e. the bending stability of the bottom is fundamentally increased. The abrupt forces occurring during the unbelting of the cartridge

ammunition are introduced into the bottom of the cartridge ammunition as bending forces due to this increased bending elasticity, i.e. due to the possibility of a stronger bending of the bottom flange instead of acting upon the same by shearing forces as has been the case till now. Due to this, the loads are absorbed without the bottom flange or parts thereof being sheared off.

The recess and/or recesses may be designed in a multiple manner. A possibility is a relief groove extending in parallel to the circumferential edge of the bottom flange of the cartridge sleeve at a close distance. Likewise, it may be provided to provide relief blind bores or relief grooves extending approximately along the circumference of the bottom flange of the cartridge shell in a ring-shaped manner in said bottom flange. It is also conceivable to process the edge of the bottom flange by e.g. providing the same with radial recesses or grooves. Grooves or series of blind bores extending in a radial or star-shaped fashion may also be provided.

A relief groove may e.g. be provided in a cartridge ammunition having a diameter of 40 mm, which extends at a distance of 4 mm from the edge of the bottom flange in parallel to it and has a width of 2 mm and a depth of 4 mm.

The solution according to the invention is very simple and also reasonably priced, since only an insignificant additional mechanical processing of the bottom flange of the cartridge shell is required.

The invention is explained in greater detail in the examples of embodiments by means of the drawing, in which:

Fig. 1 shows a view of a cartridge ammunition according to the invention, which is partially cut in the longitudinal direction, which has recesses according to the invention that are provided in the bottom of the cartridge shell;

Fig. 2, 3 and 4 show views of the bottom of the cartridge shell with different designs of the recesses.

A partially cut representation of a cartridge ammunition 1 is shown in Fig. 1, which has a caliber of e.g. 40 mm. The ammunition 1 comprises a cartridge shell 10 and a projectile 11 received in it.

An ignition charge 13 and a propellant charge 14 are accommodated in a cartridge 12 screwed into the bottom of the cartridge shell 10. Here, the cartridge 12 delimits a high-pressure chamber 21, in which the propellant charge 14 burns after the ignition by the ignition charge 13. The high-pressure chamber 21 is connected with a low-pressure chamber 10a forming the inner space of the cartridge shell 10 via several overflow openings 22, which are possibly covered with a cover 23, said low-pressure chamber being delimited by the walls of the cartridge shell 10 and the bottom of the projectile 11.

The cartridge 12 is provided with a thread 24 projecting upwards on its upper side onto which a corresponding internal thread 25 is screwed at the rear of the projectile. A rated break point 12d is provided

in the area of the transition between the upper wall of the cartridge 12 and the thread 24.

The described cartridge ammunition is e.g. shot from automatic firearms with a high shooting frequency as a practice ammunition. Here, the individual cartridges are magazined in the belt 31 which is only shown in outlines and which surrounds the cartridges in the upper portion of the cartridge shell 10.

At its lower edge the cartridge shell 10 has a bottom flange 32, which slightly projects radially beyond the diameter of the projectile 11, whose lower side forms the bottom of the cartridge shell. According to the invention one or several recesses 33 are provided in the bottom of the cartridge shell.

According to a first embodiment the recesses are formed by a groove 33a that is shown in Fig. 2 and is in parallel to the circumferential edge of the bottom flange 32 and that is disposed at a small distance from the circumferential edge. The thickness of material of the bottom flange 32 is reduced there due to the groove and the bending elasticity of the bottom flange is increased. Then, the edge of the bottom flange can be bent "downwards" during the unbelting of the cartridge ammunition by means of the retaining claws of the lock of the automatic firearm, the width of the groove at the bottom of the cartridge shell being reduced.

According to Fig. 3 the recesses are designed as individual blind bores 33b, which, like the groove 33a, are located in a circle in parallel to the edge of the bottom flange at a small distance to each other. The blind bores, in turn, are dimensioned in such a way

that they make a greater bending of the bottom flange on its edge possible.

It is likewise possible to additionally provide recesses by means of grooves or blind bores 33c starting e.g. in a star-shaped manner from the center of the bottom flange as this is outlined in Fig. 3.

A further possibility for increasing the bending elasticity of the bottom flange 32 is shown in Fig. 4. Here, the outer edge of the bottom flange 32 is provided with recesses 33d. These recesses 33d are designed as grooves or the like pointing in the direction of the center of the bottom flange 32 from its circumference, which are located at a small distance from each other.

It was possible to prove with all represented and similar variants that no problems occur upon the shooting of the cartridge ammunition from the belt of an automatic gun and a shearing off of the edge of the bottom flange is avoided.

Claims:

1. A cartridge ammunition comprising an unsplined projectile and a cartridge shell receiving it, both of which define a longitudinal direction of said ammunition, the cartridge ammunition being adapted to be magazined in a belt for an automatic firearm and the cartridge shell having a bottom with a radially disposed bottom flange, the bottom flange having a given width in said longitudinal direction, wherein the cartridge shell has at least one recess adjacent to the bottom flange which is configured and disposed in such way that the bending elasticity of the bottom flange is increased, said recess having a depth in said cartridge shell which is equal to or greater than said width of said bottom flange and being disposed at a distance from said bottom flange which provides bending elasticity while maintaining sufficient strength in the cartridge shell to withstand the mechanical stress of automatically unbelting the ammunition.

2. The cartridge ammunition according to claim 1, adapted to be pulled out of the belt by means of an unbelting device, with the edge of the radially disposed bottom flange of the cartridge shell with said at least one recess adapted to being engaged by the unbelting device.

3. The cartridge ammunition according to claim 1, wherein the at least one recess is disposed along a circumference of the bottom flange at a small distance from an outer edge of the bottom flange.

4. The cartridge ammunition according to claim 1, wherein the at least one recess is formed as at least one groove which extends substantially concentrically about the center of the bottom flange near an outer edge of the bottom flange.

5. The cartridge ammunition according to 1, wherein the at least one recess is formed as a series of blind bores which are disposed substantially concentrically about the center of the bottom flange near the outer edge of the bottom flange.

6. The cartridge ammunition according to claim 1, where a plurality of recesses are provided, which are formed as round holes adjacent the bottom flange.

7. The cartridge ammunition according claim 6, wherein at least some of the recesses are radially disposed in the bottom flange.