A case bottom is provided for use with a large-caliber ammunition cartridge. The case bottom has a bottom section; a cylindrical section connected to the bottom section; a guide region provided on an end of the cylindrical section opposite the bottom section; and a ring-shaped elastic obturator that projects from and is connected to the cylindrical section. An outside diameter of the guide region is such that it is for supporting itself directly on an inside wall of a loading chamber for a respective weapon barrel following loading of the cartridge.
CASE BOTTOM FOR LARGE CALIBER AMMUNITION AND METHOD FOR PRODUCING SAME

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority of German Patent Application, DE 103 54 011.3 filed Nov. 19, 2003, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] The invention relates to a case bottom for large-caliber ammunition. The invention furthermore relates to a method for producing a case bottom of this type.

[0003] A related case bottom is known, for example, from reference DE 23 03 790 C3. It comprises a bottom section and a cylindrical case section made of steel, provided on the front with a relatively thin-walled, web-type guide region for guiding a ring-shaped obturation. The web-type guide region in this case is covered on the inside and outside completely by the obturation, so that following the loading of the respective cartridge, the guide region supports itself via the obturation, e.g. consisting of rubber, on the wall of the weapon barrel.

[0004] The known case bottom has the disadvantage that the web-type guide region frequently plasticizes near the wall of the weapon barrel if the case bottom is subjected to high pressures, such as are typical with performance-enhanced KE ammunition. This non-reversible deformation of the guide region causes a jamming of the case bottom inside the weapon barrel, so that increased forces are required to remove the case bottom from the weapon loading chamber after the firing, wherein the respective weapons frequently cannot generate these forces. In addition, the case bottom is generally not reusable in that case.

SUMMARY OF THE INVENTION

[0005] It is an object of the present invention to provide a case bottom for which the guide region necessary for guiding the obturation is no longer plastically deformed, not even with gas pressures typical for performance-enhanced ammunition, thus requiring only relatively low forces for removing the case bottom from the weapon. The invention furthermore relates to a method for producing a case bottom of this type by reworking a known case bottom with a guide region enclosed on the outside and inside by the elastic obturation.

[0006] This object is achieved by the invention by providing a case bottom for use with a large-caliber ammunition cartridge. The case bottom has a bottom section; a cylindrical section connected to the bottom section; a guide region provided on an end of the cylindrical section opposite the bottom section; and a ring-shaped elastic obturation that projects from and is connected to the cylindrical section. An outside diameter of the guide region is such that it is for supporting itself directly on an inside wall of a loading chamber for a respective weapon barrel following loading of the cartridge.

[0007] This object is also achieved by a method for producing a case bottom. The method includes selecting an existing case bottom having a web-type guide region extend-

ing from a cylindrical section, the guide region being enclosed on an inward radial side and an outward radial side by an elastic obturation; removing the obturation and the guide region; forming an annular groove in an internal surface of the remaining portion of the cylindrical section; and installing a new elastic obturation on the cylindrical section, the new elastic obturation engaging the annular groove.

[0008] Further and particularly advantageous embodiments of the invention are also disclosed.

[0009] The invention is based on the idea of designing the guide region on the case bottom in such a way that the bottom is supported on the outside directly on the inside wall of the loading chamber for the respective weapon.

[0010] The obturation in this case only encloses the guide section on the inside and can, for example, be connected to the case section by vulcanizing.

[0011] There are proven advantages if the inside surface of the case section is provided with an annular groove in the guide region, to which the ring-shaped obturation can be connected by vulcanizing, thus permitting a simple and secure installation of the obturation.

[0012] It is advantageous if the design of the new case bottoms matches that of the existing old case bottoms, so that these can be produced easily by recycling old existing case bottoms with web-shaped guide sections, which are completely enclosed on the inside and outside by the elastic obturation.

[0013] The complete obturation together with the web-type guide region of the case section is initially removed from the existing old case bottom and an annular groove inserted into the internal surface of the remaining case section. Finally, the new, elastic obturation is attached to the case section provided with the annular groove, preferably by vulcanizing on an elastomer.

[0014] With this method, the design of the new case bottom is usefully selected to allow a continued use of the old existing vulcanizing tools as well as the existing case jackets for the respective ammunition.

[0015] The propellant case for the respective ammunition as a rule is guided better in the radial direction by the elastic obturation if the new case bottom is used, than would be the case with the old case bottom.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] Further details and advantages of the invention follow from the exemplary embodiments explained below with the aid of Figures, which show:

[0017] FIG. 1 is a view of the side of the case bottom region of a tank cartridge, wherein the case bottom is shown in a partial sectional view; and

[0018] FIGS. 2 to 4 are longitudinal sections through a case bottom (FIG. 4), produced with a recycled case bottom FIG. 2), showing different method steps.

DETAILED DESCRIPTION OF THE INVENTION

[0019] FIG. 1 shows an example of an embodiment of the invention. The reference 1 in FIG. 1 relates to the case
bottom of a tank cartridge with combustible case jacket. The case bottom comprises a bottom section and a cylindrical case section of steel. On the side facing away from the bottom section, the case section is provided with a guide region for guiding a ring-shaped obturation of rubber that projects on the front and is connected to the case bottom. 

[0020] According to the invention, the outside diameter of the guide region is selected such that following the loading of the respective cartridge, the guide region supports itself directly and peripherally on the loading chamber inside wall of the respective weapon (not shown herein), so that no plastic deformation can occur in the guide region during the firing of a cartridge.

[0021] The internal surface of the case section is provided with an annular groove in the guide region, wherein the obturation is connected to the case section by vulcanizing.

[0022] FIGS. 2 to 4 show that the case bottom according to the invention can be manufactured easily from a traditional case bottom having a web-type guide region that is enclosed completely on the inside and outside by an elastic obturation.

[0023] In this manufacturing method, the complete obturation together with the web-type guide region of case section is initially removed from the old case bottom (FIG. 2) e.g. by twisting it off. Subsequently, the annular groove is formed in the internal surface of the remaining case section (FIG. 3). Finally, the new, elastic obturation is attached to the case section, provided with the annular groove, preferably by vulcanizing on an elastomer.

[0024] The invention is not limited to the above-described exemplary embodiment. It will be apparent, based on this disclosure, to one of ordinary skill in the art that many changes and modifications can be made to the invention without departing from the spirit and scope thereof.

What is claimed is:

1. A case bottom for use with a large-caliber ammunition cartridge, the case bottom comprising:
   a bottom section;
   a cylindrical section connected to the bottom section;
   a guide region provided on an end of the cylindrical section opposite the bottom section; and
   a ring-shaped elastic obturation that projects from and is connected to the cylindrical section,
   wherein an outside diameter of the guide region is such that it is for supporting itself directly on an inside wall of a loading chamber for a respective weapon barrel following loading of the cartridge.

2. The case bottom according to claim 1, wherein an internal surface of the cylindrical section in the guide region is provided with an annular groove to which the elastic obturation is connected with a clip-type connection.

3. The case bottom according to claim 1, wherein an elastomer is vulcanized to the cylindrical section to form the elastic obturation.

4. A method for producing a case bottom, comprising:
   selecting an existing case bottom having a web-type guide region extending from a cylindrical section, the guide region being enclosed on an inward radial side and an outward radial side by an elastic obturation;
   removing the obturation and the guide region;
   forming an annular groove in an internal surface of the remaining portion of the cylindrical section; and
   installing a new elastic obturation on the cylindrical section, the new elastic obturation engaging the annular groove.

5. The method according to claim 4, wherein the new elastic obturation in an elastomer that is vulcanized on to the cylindrical section.

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