Patent Claims

1. Sealing ring (100) for obturation of a propellant charge cartridge (4) of an automatic firearm for caseless ammunition, in particular relative to an end face (S) of a firearm element, in particular a breech (77) or a projectile cartridge (2), wherein the sealing ring (100) comprises a sealing surface that can be brought into contact with the end face (S),

characterized in that,

the sealing surface comprises a first region (A_1) around the annular opening (D) of the sealing ring (100) and a second region (A_2) around the first region (A_1), wherein the second region (A_2) is set back (α) relative to a tangential plane (T) to the first region (A_1).

2. The sealing ring (100) as claimed in claim 1, wherein the first region (A_1) of the sealing surface is in the form of a planar annular surface around the annular opening (D) of the sealing ring (100), and
wherein the second region (A_2) is in the form of a conically shaped surface externally adjoining the annular surface.

3. The sealing ring (100) as claimed in claim 2, wherein the planar annular surface (A_1) is arranged to be brought into plane parallel contact with the planar end face (S) at ambient temperature.

4. The sealing ring (100) as claimed in claim 2 or 3, wherein the conically shaped surface (A_2) is arranged to be brought into plane parallel contact with the planar end face (S) following heating of

the sealing ring (100) by one or more firings from the firearm.

5. The sealing ring (100) as claimed in any one of claims 2 to 4,
wherein the angle (α) between the planar annular surface (A_1) and the conically shaped surface (A_2) is in the range from 5 to 20 arc minutes, preferably in the range from 10 to 15 arc minutes.

6. The sealing ring (100) as claimed in any one of claims 2 to 5,
wherein the thickness of the annulus of the planar annular surface (A_1), i.e. the difference between the outer annulus radius and the inner annulus radius, is in the range from 0.5 mm to 2 mm, preferably in the range from 0.5 mm to 1 mm.

7. The sealing ring (100) as claimed in claim 6,
wherein the ratio of the thickness of the annulus of the planar annular surface (A_1) to the length of the generatrix of the conical frustum of the conically shaped surface (A_2) is in the range from 1 : 6 to 1 : 4, preferably at 1 to 5.

8. The sealing ring (100) as claimed in any one of claims 1 to 7,
wherein the material from which the sealing ring (100) is manufactured contains a metal or a metal alloy, in particular steel.

9. A propellant charge cartridge (4) for an automatic firearm for caseless ammunition, with at least one sealing ring (100) as claimed in any one of claims 1 to 8,
wherein the propellant charge cartridge (4) comprises one or multiple, preferably two, propellant charge chambers (5, 50), which are each

provided with a sealing ring (100) on the breech side and on the projectile cartridge side.

10. The propellant charge cartridge (4) as claimed in claim 9,
comprising stepped sealing ring seats (15), into which the sealing rings (100), which are stepped on the side remote from the sealing surface, are inserted to form a labyrinth seal, wherein one or multiple, preferably six, springs (16) are positioned in the sealing ring seats (15), preferably in recesses (18), wherein the springs press the sealing rings (100) against a stop (17) overlapping the lateral edge of the sealing rings (100).

Patent Claims

1. Sealing ring (100) for obturation of a propellant charge cartridge (4) of an automatic firearm for caseless ammunition, in particular relative to an end face (S) of a firearm element, in particular a breech (77) or a projectile cartridge (2), wherein the sealing ring (100) comprises a sealing surface that can be brought into contact with the end face (S),

   wherein the sealing surface comprises a first region (A_1) around the annular opening (D) of the sealing ring (100) and a second region (A_2) around the first region (A_1), wherein the second region (A_2) is set back (α) relative to a tangential plane (T) to the first region (A_1)

   wherein the first region (A_1) of the sealing surface is in the form of a planar annular surface around the annular opening (D) of the sealing ring (100), and
   wherein the second region (A_2) is in the form of a conically shaped surface externally adjoining the annular surface

   wherein the magnitude of the cone angle (α) between the planar annular surface (A_1) and the conically shaped surface (A_2) in the cold state of the sealing ring (100) is selected such that the cone angle (α) is compensated to 0° by heating of the sealing ring such that the conically shaped surface (A_2) can be brought into plane parallel contact with the planar end face (S) following heating of the sealing ring (100) by one or more firings from the firearm.

2. The sealing ring (100) as claimed in claim 1, wherein said planar annular surface (A_1) lies entirely in said tangential plane (T) at ambient temperature.

3. The sealing ring (100) as claimed in claim 1 or claim 2, wherein the magnitude of the cone angle (α) is in the range from 5 to 20 arc minutes, preferably in the range from 10 to 15 arc minutes.

4. The sealing ring (100) as claimed in any one of claims 1 to 3,
wherein the thickness of the annulus of the planar annular surface (A_1), i.e. the difference between the outer annulus radius and the inner annulus radius, is in the range from 0.5 mm to 2 mm, preferably in the range from 0.5 mm to 1 mm.

5. The sealing ring (100) as claimed in claim 4,
wherein the ratio of the thickness of the annulus of the planar annular surface (A_1)to the length of the generatrix of the conical frustum of the conically shaped surface (A_2) is in the range from 1 : 6 to 1 : 4, preferably at 1 to 5.

6. The sealing ring (100) as claimed in any one of claims 1 to 5,
wherein the material from which the sealing ring (100) is manufactured contains a metal or a metal alloy, in particular steel.

7. A propellant charge cartridge (4) for an automatic firearm for caseless ammunition, with at least one sealing ring (100) as claimed in any one of claims 1 to 6,
wherein the propellant charge cartridge (4) comprises one or multiple, preferably two, propellant charge

chambers (5, 50), which are each provided with a sealing ring (100) on the breech side and on the projectile cartridge side.

8. The propellant charge cartridge (4) as claimed in claim 7,
comprising stepped sealing ring seats (15), into which the sealing rings (100), which are stepped on the side remote from the sealing surface, are inserted to form a labyrinth seal, wherein one or multiple, preferably six, springs (16) are positioned in the sealing ring seats (15), preferably in recesses (18), wherein the springs press the sealing rings (100) against a stop (17) overlapping the lateral edge of the sealing rings (100).