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(54) **Wad for cartridges of smooth-bore shotguns**

(57) A wad is provided particularly for steel small shot for cartridges of smooth-bore shotguns or shooting rifles. Each cartridge has a case (11) having an end percussion cap (12) and containing a firing charge (13) and, above that, the wad (15) for accommodating the small shot. The wad has a base (12) turned towards the firing charge (13) and a cylindrical lateral wall (17) which extends from the base towards the direction of firing, in which said cylindrical lateral wall of the wad and the case define an annular space (19) between them intended to prevent the expansion of small shot over the entire cross section of the barrel.

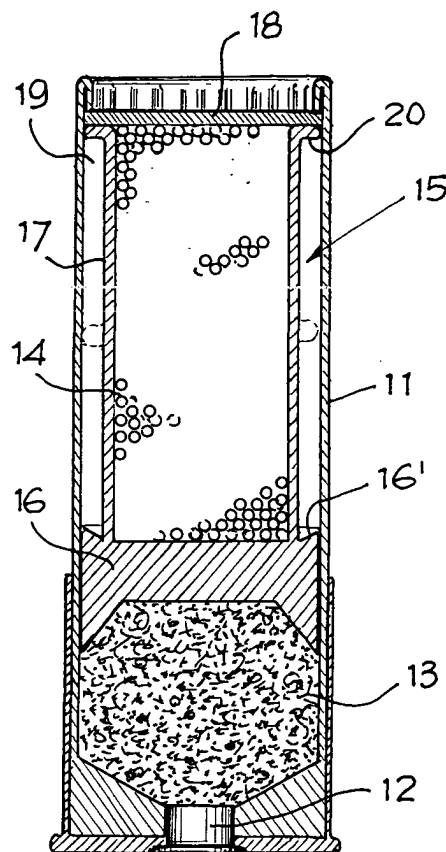


Fig. 1

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Description

[0001] The present invention pertains to small-shot cartridges for smooth-bore shotguns or shooting rifles, and pertains in particular to a wad for steel small shot.

[0002] As is known, such cartridges comprise a case having an end percussion cap and containing a firing charge and bullets consisting of a plurality of lead or steel small shot. In some cartridges, the charge and the small shot may be separated by a wad, which can be shaped like a cup for containing the small shot proper and for functioning as a concentrator of the small-shot cluster.

[0003] The use of steel small shot is, on the one hand, preferred compared to the use of lead small shot because of the known toxic action of the latter, and on the other hand, it is limited only to those rifles, whose barrel has a very smooth choke, called in slang "slippery union." In fact, steel small shot, unlike the lead small shot, is neither compressed nor crushed, passing through the choke of the mouth of the barrel and, if a common choke with a truncated cone or straight union is used, it runs the risk of making the barrel explode.

[0004] The object of the present invention is to propose a cartridge wad for smooth-bore shotguns or shooting rifles, which makes it possible to use steel small shot with any type of barrel and related choke.

[0005] The object is accomplished with a wad for cartridges of smooth-bore shotguns or shooting rifles, having a base turned towards the firing charge contained in the case, and a cylindrical lateral wall that extends from said base towards the firing direction, in which said cylindrical lateral wall of the wad and the case define between them an annular space intended to prevent the expansion of the small shot over the entire cross section of the barrel. In practice, the diameter of the cylindrical lateral wall of the wad is less than that of its base, said lateral wall preventing the cluster of small shot produced by the explosion from striking against the bore of the barrel.

[0006] In any case, greater details of the present invention and its embodiment variants will become more evident from the description below with reference to the attached, indicative and nonlimiting, drawings. The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, and its operating advantages and specific objects attained by its uses, reference is made to the accompanying drawings and descriptive matter in which preferred embodiments of the invention are illustrated.

[0007] Figure 1 is an axial section of a cartridge, in which is inserted a wad for steel small shot according to a first embodiment.

[0008] Figure 2 is an axial section of a wad in a second embodiment.

[0009] Figures 3, 4 and 5 are perspective views of a

wad for steel small shot according to other embodiments.

[0010] Referring to the drawings in particular, Figure 1 shows a cartridge for smooth-bore shotguns for steel small shot, comprising a case 11 having an end percussion cap 12 and containing, in order from the end, a firing charge 13 and a charge of steel small shot 14. The small shot is arranged in a wad 15 in the form of a cup, or made up of a base 16 turned towards the firing charge 13 and of a cylindrical lateral wall 17 that extends from this base 16 and that is open forwards in the firing direction. The case 11 is closed at the top by a disk 18.

[0011] According to the present invention, the diameter of the cylindrical lateral wall 17 of the wad is less than that of its base 16, so that the case 11 and said cylindrical lateral wall 17 define a space 19 between them. For example, the diameter of the cylindrical lateral wall 17 may be one or two gauges less than that of its base 16, i.e., of the cartridge. The cylindrical lateral wall 17 thus limits the expansion of the cluster of steel small shot over a section suitable for passage through the choke of the barrel of the gun, preventing the shot from striking against the bore of the barrel.

[0012] In addition, the wad 15 may be provided, preferably close to its opening, with a whole or segmented, annular element 20, with a centering and guide function for the wad during its sliding in the barrel of the rifle.

[0013] Moreover, the annular portion 16' of the base 16 of the wad, which protrudes in relation to the cylindrical lateral wall 17, may have a conical course, converging downwards to function as an air intake and to contribute to the slowing down of the wad in relation to the small shot following the front impact with the air.

[0014] In a second embodiment illustrated in Figure 2, the air intake for the wad 21 is embodied by making a series of longitudinal cuts 22 along an end annular portion of the lateral wall of the wad. Following the impact with the air, this end portion of the wad 21 opens thanks to the presence of the longitudinal cuts 22. In this case, the annular guide element 20 is provided just below the end annular portion.

[0015] Figure 3 shows a wad 23 similar to that described in Figure 1, but in which, for its guiding in the barrel of the rifle, a plurality of longitudinal ribs 24 are provided along the lateral wall 17.

[0016] In a fourth embodiment shown in Figure 4, the wad 25 has two concentric cylindrical walls 26, 27, the more external one 26 having a diameter equal to the gauge of the cartridge and the more internal one 27 being one or two gauges less for containing the small shot. Longitudinal cuts 28 can be provided on the external wall 26 to make possible the opening of the wall proper after the impact with the air.

[0017] Figure 5 shows another wad 29 similar to the one in the previous Figure (4), but in which the external wall 30, having longitudinal cuts 31, only partially surrounds the internal wall 32 from the base 33 of the wad. For example, good ballistic results were obtained with

an external wall 30 with a height equal to about one third of the internal one 32.

[0018] While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

Claims

1. A smooth-bore shotgun or shooting rifle cartridge and wad comprising: a case (11) having an end percussion cap (12) and containing a firing charge (13) in said case and a wad (15) for accommodating small shot, said wad (15, 21, 23) having a base (16) turned towards the firing charge (13) and a cylindrical lateral wall (17) extending from a base towards a direction of firing, **characterized in that** said cylindrical lateral wall (17) and the case (11) defining an annular space (19) between them for substantially preventing an expansion of the small shot over a cross section of the barrel.
2. A cartridge and wad in accordance with claim 1, wherein the base (16) has a diameter equal to a gauge of the cartridge and a diameter of the cylindrical lateral wall (17) is less than the diameter of said base.
3. A cartridge and wad in accordance with claim 2, in which the diameter of the cylindrical lateral wall (17) is at least one gauge less than the gauge of the base (16).
4. A cartridge and wad in accordance with any one of the preceding claims, wherein the wad includes a whole or segmented annular element (20) close to an opening of the case for centering and guiding the wad during its sliding in the barrel of the rifle.
5. A cartridge and wad in accordance with claim 4, wherein the wad has a plurality of longitudinal cuts (22) along an end annular portion of the lateral wall of the wad, the annular element (20) being provided below said end annular portion.
6. A cartridge and wad in accordance with any one of claims 1 to 3, wherein said lateral wall has a plurality of longitudinal ribs (24) for centering and guiding the wad during its sliding in the barrel of the rifle.
7. A cartridge and wad in accordance with any one of claims 2 to 6, wherein said base (18) has an annular upper surface (16) protruding externally from the cylindrical lateral wall (17) and the annular surface (16) has a conical course converging downwards.
8. A cartridge and wad for steel small shot for cartridges of smooth-bore shotguns or shooting rifles, comprising: a case having an end percussion cap (12) and containing a firing charge (13) and a wad (25, 29) above the firing charge for accommodating steel small shot, said wad having a base (33) turned towards said firing charge (13) and two concentric cylindrical walls (26, 27, 30, 32) extending from said base towards the direction of firing, said walls including an external wall (26, 30) having a diameter equal to the gauge of the cartridge and an internal wall (27, 32) intended for accommodating the steel small shot, said internal wall having a diameter less than the gauge of the cartridge by one gauge.
9. A cartridge and wad in accordance with claim 8, wherein said external wall (26, 30) has a plurality of longitudinal cuts (28, 31).
10. A cartridge and wad in accordance with claim 8 or 9, wherein said external wall (26, 30) has a height equal to about one third of said internal wall (32).

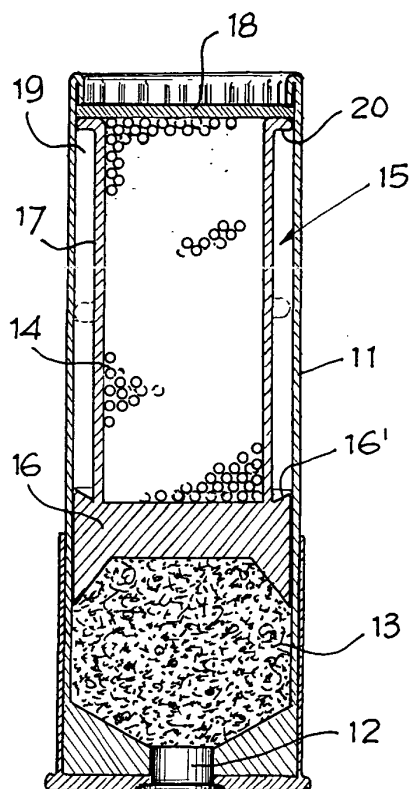


Fig. 1

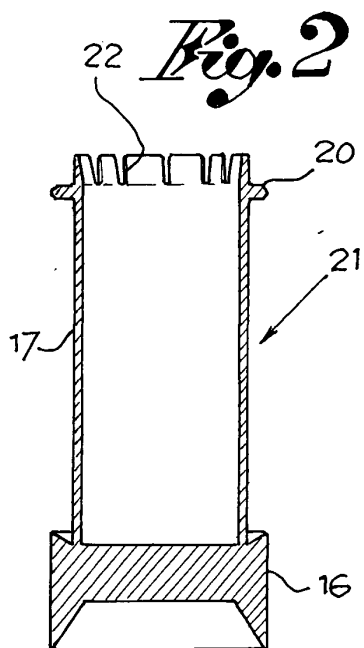


Fig. 2

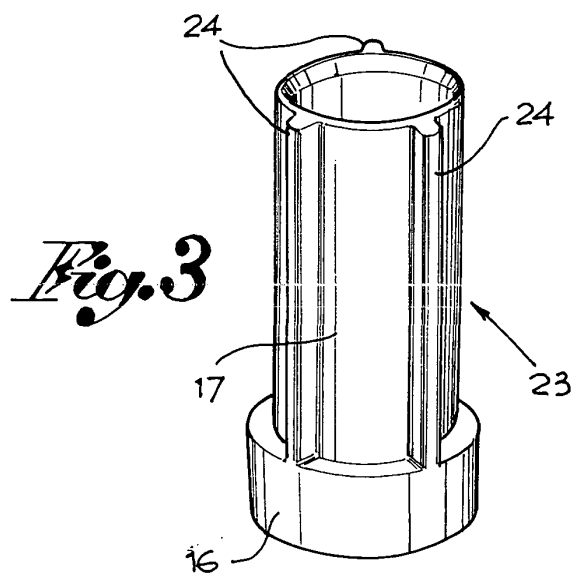


Fig. 3

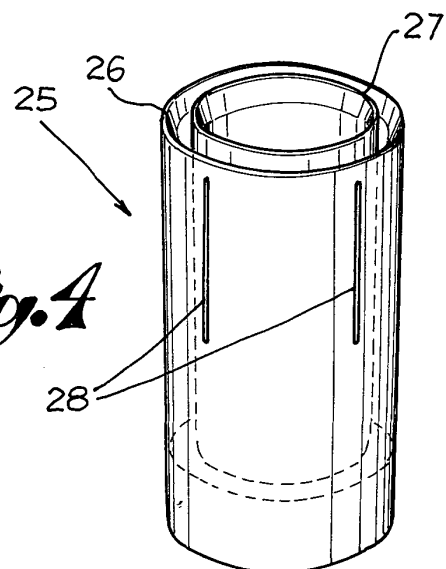


Fig. 4

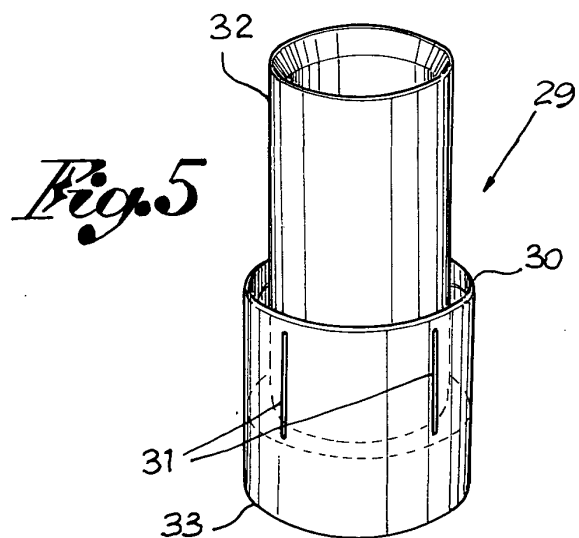


Fig. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5498

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		15 January 2004	Menier, R
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 03 42 5498

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