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Sabot for a Subcaliber Projectile

The invention relates to an ejectable sabot for a pointed subcaliber projectile, having a sabot body in which the pointed projectile is anchored, and a sabot casing encompassing at least a portion of the front end of the pointed projectile and a portion of the sabot body.

In a sabot of this type, both the sabot body and the sabot casing are segmented, which may result in leaks at the contact surfaces of the sabot segments on one hand, and of the pointed projectile and the segments of the sabot body on the other hand.

From EP-A- 0 624 774, a sabot according to the preamble is known, in which a special segmentation of the sabot body in the form of longitudinal slits, having at least in part a T-shaped cross-section, is used to eliminate the above-mentioned sealing problems. Furthermore, a gas-tight seal is created by a sealing cap with terminal seal, and rated break points are provided in the area of the inside diameter of the sabot.

This sabot has a relatively complicated design and is therefore rather expensive to manufacture. Also, gas leaks may occur at the location of the joints between the sabot casing and the sabot body. Furthermore, because of the size of the sabot body, the ejection of the sabot during discharge results in relatively large metal splinters.



The present invention is aimed at designing a sabot of the above type without the above- mentioned drawbacks.

This aim is met with the invention described in Claim 1. In the design according to the invention, the sabot is fully enclosed by the sabot casing which also partially encloses the rear of the pointed projectile. The sabot body has the shape of a hollow cylinder with circumferential grooves, and a diameter which is smaller than that of the sabot casing.

Particularly advantageous designs of the sabot are described in the sub-claims.

The sabot according to the invention has the advantage that the complete embedding of the sabot body in a sabot casing made of a synthetic material, produces an optimum seal due to the absence of any metallic surfaces and the prevention of micro-fissures. The sabot body is easy to manufacture and small in comparison to the prior art, resulting in a reduced overall weight of the sabot and smaller and lighter-weight metal splinters produced during the discharge, thus diminishing the danger zone in the vicinity of the muzzle. The rated break points of the sabot are designed so that an easy separation takes place after the discharge. The pointed projectile has only a few catch grooves, resulting in an optimized air resistance profile and relatively low weight reduction. The invention is described in detail below, based



on two embodiments presented on the accompanying drawing, in which:

Fig. 1 is a longitudinal section along the line I-I in *Fig. 2* through a sabot with pointed projectile according to the invention,

Fig. 2 is a cross-section through the sabot along the line II-II in *Fig. 1*,

Fig. 3 is a view of the sabot in the direction of the arrow A in *Fig. 1*,

Fig. 4 is a view of the sabot in the direction of the arrow B in *Fig. 3*,

Fig. 5 is a longitudinal section along the line IV-IV in *Fig. 6*, through a variation of the sabot with pointed projectile according to the invention.

Fig. 6 is a cross-section through the sabot along the line III-III in *Fig. 5*,

Fig. 7 is an enlarged longitudinal section through a sabot body along the line V-V in *Fig. 9*,

Fig. 8 is an enlarged longitudinal section through a sabot body along the line VI-VI in *Fig. 10*,



Fig. 9 is a view of the sabot body in its first embodiment in the direction of the arrow C in *Fig. 7*, and

Fig. 10 is a view of the sabot in its second embodiment in the direction of the arrow D in *Fig. 8*.

In *Fig. 1* through *4*, the reference number 1 denotes a pointed projectile and the reference number 2 denotes a sabot on the pointed projectile 1. The sabot 2 consists of a sabot casing 3 made of a high-temperature, fiber reinforced thermoplastic synthetic material and a sabot body 4 made of a light metal. The sabot body 4 is completely enclosed by the sabot casing 3, with the sabot casing 3 engaging into circumferential grooves 5 of the sabot body 4 and encompassing a portion of the front and rear of the pointed projectile 1. The pointed projectile 1 is secured to the sabot body 4 with a screw connection, whereby the length of a thread 6 of the projectile 1 has been kept short to attain better flight characteristics. The thread 6 protrudes from the sabot body 4 and transitions into a smooth shaft 7 with a smaller diameter, forming a shoulder 8 which is encompassed by the sabot casing 3. The sabot casing 3 has, at its rear, a plurality of indentations 9 functioning as rated breakpoints. In the front portion of the sabot casing 3, six channels 10 with essentially prismatic cross-sections are equally spaced around the circumference and conically narrow towards the rear. The channels 10 are connected, via slits 11 which also conically



narrow towards the rear, to the surface of the sabot casing 3, thus forming six segments. It is also possible, however, to design the sabot casing 3 with three, four or five channels 10 and slits 11. The reference number 12 marks a groove used to secure a cap not shown on the drawing. The rear of the pointed projectile 1 has an additional thread 13 to which a stabilizing wing may be attached, which is also not shown on the drawing.

The sabot body 4, as shown in Fig. 5 and 6, is a multi-part hollow body with an exterior diameter which is smaller than that of the sabot casing 3, comprising segments with circumferential grooves 5. The segments are joined via so-called disconnects 28 and have, at their end sections, an interior tothing to anchor the hollow body that forms the sabot body with its pointed projectile 1. An additional fastening grove 35 is provided in the rear section of the sabot casing 3.

In a further embodiment of the invention illustrated in Fig. 7 and 9, the actual sabot body 4 consists of a hollow cylinder with circumferential grooves 5 and an exterior diameter which is smaller than the diameter of the sabot casing 3. The sabot body 4 has, at its rear, an interior thread 20 for a screw connection of the pointed projectile 1. Inside the sabot body 4, six slits 21 are equally spaced around the circumference, forming six segments extending from the front 22 to the rear of the sabot body 4, where they are



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delimited by rated break points 23. In further embodiments of the invention, which are not shown on the drawing for ease of viewing, the rated break points 23 are located at the front 22 and/or the middle section of the slits 21.

As shown in detail in Fig. 8, the delimiting surfaces 24 of the rated break points 23, for example, are located on the arc of a circle 25 with center of curvature 26 located on the center axis 27 of the sabot body 4. In lieu of six slits 21, the sabot body 4 may also have three, four or five slits 21, resulting in the formation of the same number of segments.

In the sample embodiment presented in Fig. 8 and 10, the sabot body 4 has four slits 30 offset by an angle of 90°. Four circular arc-shaped recesses 31 extend along the entire length of the sabot body 4 in the area of the slits 30, with the center of curvature 32 of the circular arcs located on an axis of symmetry 33 of the slits 30. The recesses 31 alone have grooves 34 corresponding to the circumferential grooves 5 of the embodiment shown in Fig. 7. Fig. 8 shows a longitudinal section through the grooves 34 along the line VI-VI of Fig. 10. This design results in a further significant reduction in weight, along with a further reduction of the risk posed by metal splinters produced after the discharge.

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1. A sabot for a pointed subcaliber projectile having a sabot body (4) inside which the pointed projectile (1) is anchored, and a sabot casing (3) encompassing at least a portion of the front of the pointed projectile (1) and a portion of the sabot body (4), characterized in that

the sabot body (4) is completely encompassed by the sabot casing (3) which also encompasses a portion of the rear of the pointed projectile (1), and that the sabot body (4) takes the form of a one-part or multi-part hollow body with circumferential grooves (5, 34) and has an exterior diameter which is smaller than the diameter of the sabot casing (3).

2. A sabot according to claim 1, whereby the sabot casing (3) is divided into segments, characterized in that

a plurality of channels (10) with an essentially prismatic cross-section are equally spaced around the circumference on the front part of the sabot casing (3), conically narrowing towards the rear, and that the channels (10) are connected to the surface of the sabot casing (3) via slits (11) which also conically narrow towards the rear, thus forming the segments.

3. A sabot according to Claim 2 characterized in that the sabot casing (3) has channels (10) and slits (11).





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4. A sabot according to Claim 3 characterized in that the sabot casing (3) has three, four or six channels (10) and slits (11).

5. A sabot according to Claim 1, whereby the sabot body (4) is divided into segments, characterized in that the sabot body (4) has a plurality of slits (21) forming the segments, spaced equally around the circumference and extending from the front (22) to the rear of the sabot body (4).

6. A sabot according to Claim 5, characterized in that the slits (21) are delimited by rated break points (23) at the front of the sabot body (4).

7. A sabot according to Claim 5, characterized in that the slits (21) are delimited by rated break points (23) at the rear of the sabot body (4).

8. A sabot according to Claim 5, characterized in that the slits (21) are delimited by rated break points (23) at both ends of the sabot body (4).

9. A sabot according to Claim 6 or 7, characterized in that the delimiting surfaces (24) of the rated break points (23) are located on an arc of a circle (25) with center



of curvature (26) located on the center axis (27) of the sabot body (4).

10. A sabot according to Claim 5 characterized in that the sabot body (4) has six slits (21) offset by an angle of 60°.

11. A sabot according to Claim 5 characterized in that the sabot body (4) has four slits (30) offset by an angle of 90°.



12. A sabot according to Claims 10 and 11, characterized in that
recesses (31) which extend along the entire length of the sabot body (4) are provided in the area of the slits (30) with the center (32) of the curvatures located on an axis of symmetry (33) of the slits (30).

13. A sabot according to Claim 12, characterized in that circumferential grooves (34) are formed exclusively in the area of the recesses (31) extending along the entire length of the sabot body (4).

14. A sabot according to Claim 1, characterized in that the sabot body (4) comprises a multi-part catch part in segment form anchored to the pointed projectile (1), whereby the individual segments are connected to one another via separating surfaces (28) and whereby the





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segments have a plurality of circumferential grooves (5)
equally spaced around the circumference.

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