

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
11 January 2007 (11.01.2007)

PCT

(10) International Publication Number
WO 2007/004961 A1

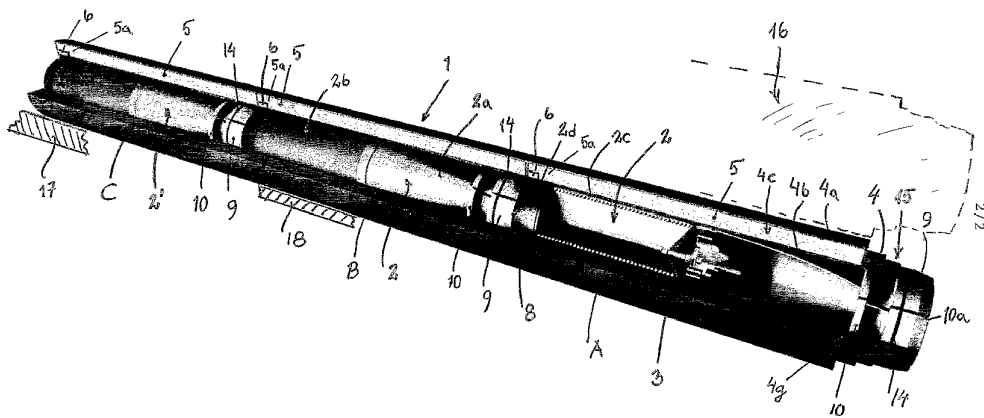
- (51) International Patent Classification:
F42B 5/03 (2006.01) *F42B 5/16* (2006.01)
- (21) International Application Number:
PCT/SE2006/000834
- (22) International Filing Date: 4 July 2006 (04.07.2006)
- (25) Filing Language: Swedish
- (26) Publication Language: English
- (30) Priority Data:
0501584-7 5 July 2005 (05.07.2005) SE
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: AMMUNITION ARRANGEMENT



(57) Abstract: An ammunition device having two or more projectiles (2) arranged one after the other. Each projectile has allocated to it a propellant charge (5) substantially surrounding the projectile arranged for individual activation with an ignition ring and an ignition system (12, 13). The projectiles and their propellant charges are arranged one after the other in an enclosing unit (1), and the projectiles are so arranged as to leave the enclosing unit one at a time in its longitudinal direction at the time of the individual activations of the propellant charges (5). Shorter ammunition devices and opportunities for rapid firing sequences of the projectiles are achieved with the invention.

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AMMUNITION DEVICE

TECHNICAL FIELD

5 The present invention relates to an ammunition device having two or more projectiles and individual propellant charges associated therewith, for example charges of gunpowder, the respective projectile having allocated to it a propellant charge substantially
10 surrounding the projectile provided with means for individual initiation, the projectiles and their surrounding propellant charges being arranged one after the other in an enclosing unit, and the projectiles at the time of the individual initiations of the
15 propellant charges being so arranged as to exit from the enclosing unit in its longitudinal direction.

PRESENTATION OF THE PROBLEM AND PREVIOUSLY DISCLOSED METHOD

20 The invention is intended to be used with firearms (e.g. canons) equipped with a firing tube, grenade shell launchers and other arrangements of weapons where rapid firing must be capable of being provided.

25 Generally previously disclosed is the arrangement, for example, of canons for rapid firing. Projectiles in the form of shells, bombs, grape-shot and other types of shot are normally arranged with their associated propellant charges or propellant loads to the rear, and
30 the firearms and the firings are arranged in this case by means of discharging of the projectiles in a serial sequence, where the respective weapon mechanism is actuated and closed for firing a first projectile and is then activated and closed again for firing the
35 subsequent projectile, and so on. The introduction of the respective projectile into the firing tube bore and firing of the various projectiles with interjacent actuations of the weapon mechanism require the expenditure of a certain time and restrict the rate of

firing. The need exists to be able to speed up the firing, and the object of the present invention is, among other things, to propose a solution to this problem.

5

In conjunction with the storage and handling of ammunition in firearms of the aforementioned kind, there is a desire to be able to keep down the combined lengths of the respective projectiles and the
10 associated propellant charge/propellant load. The arrangement must also be such that ammunition for supersonic velocities (e.g. mach 3-5) must be capable of being available. Conventional magazines and magazine constructions must also be capable of being eliminated
15 by the ability of the ammunition unit itself to operate with a magazine function, for example a magazine function for one-off use. The ammunition device must in addition be readily capable of being incorporated with an existing firing tube and of being embodied to permit
20 one-off use of the parts that must be separated in conjunction with the respective discharge. The invention also solves this problem.

The times between the firings of the projectiles in
25 firing tube weapons must be capable of being reduced to very short times, for example to times of ca. 0.02 second. Ammunition calibres of 9-60 mm, and preferably 20, 30, 40 mm grenade shells, must be capable of being utilized in the arrangement. These new trains of
30 thought must also be capable of being integrated into metal storm technologies, where the ammunition device together with other ammunition technologies is arranged in arrays for multiple projectiles according to the invention and with high firing rates involving the
35 firing of, for example, 45,000 rounds/minute from the respective firing tube or firearm. The new ammunition unit must also be capable of being used in conjunction with grenade shell launchers that are easy to transport to and to deploy at the point of firing. Terrain

analysis and target acquisition arrangements of a previously disclosed kind must be capable of selecting suitable firing tubes, both with regard to the number of firing tubes fired and the type of ammunition
5 contained in the respective firing tube to achieve the maximum effect of the coverage and sequences in conjunction with firings of multiple projectiles. 9 mm ammunition can be used, for example, in the case of firing of this kind. The present invention also offers
10 a solution to this problem. From an overall point of view, the present inventions also endeavour to make available a financially advantageous handling and firing system where the parts involved can be embodied for one-off use, in spite of the aforementioned
15 increased firing rates.

PURPOSE OF THE INVENTION AND DISTINCTIVE FEATURES

The essential characteristic of an ammunition device according to the invention is that the enclosing unit
20 comprises a plurality of longitudinal parts so arranged as to be capable of assembly one with the other to produce a longer weapon.

According to further characteristics of an ammunition
25 device according to the invention, it is required:

that the enclosing unit is so arranged as to be applicable to an existing weapon firing tube;

30 that the enclosing unit together with other enclosing units is so arranged as to be included in a weapon comprising a multi-firing tube arrangement;

that the respective projectile in its position in the enclosing unit has a bottom part on the rear part of the projectile facing towards a first space, preferably executed as a gap, between the bottom part
35 and a front surface belonging to or allocated to either the subsequent projectile or the enclosing unit, where the latter case applies to the rearmost projectile;

that the first space includes means, on initiating the propellant charge of the projectile, for giving the

generated propellant gases access to the first space and thereby causing the projectile to be driven from the enclosing unit;

5 that access to the first space by the generated gases is so arranged as to take place via casing openings covered by one or more bursting discs so arranged as to give way at a predetermined gas pressure value;

10 that the ignition zone of the propellant charge is arranged in a second space/casing space radially outside the first space;

15 that the respective propellant charge is arranged in a casing, which casing is ring-shaped in its cross section and is preferably fluted on parts of its inner surface, which casing is situated outside the projectile and is open rearwards towards the first space;

20 that the casing is executed as an inner tube in relation to the enclosing unit, i.e. comprising a second space/casing space, and that a third, smaller space or recess which exhibits inward-facing casing openings for the gases generated by the propellant charges is arranged next to the first space;

25 that the second space/casing space is divided in its longitudinal extent into casing sections each comprising a casing space for its own propellant charge and means for the individual initiation of these propellant charges;

30 that that the casing provides a guide for the projectile as it is propelled from the enclosing unit;

35 that the front space belonging to the subsequent projectile constitutes the front surface of a propellant reflector part that is provided with sealing means against an inner surface inside the enclosing unit;

that the respective projectile is so arranged as to leave the enclosing unit before firing of the subsequent projectile takes place;

that the subsequent projectile is so arranged as

to be capable of being actuated for its propulsion from the enclosing unit before the preceding projectile has left the aforementioned enclosing unit;

that it is so arranged as to be capable of being
5 fired by means of a large-bore firearm, for example a firing tube weapon with a bore of 20-40;

that the projectiles and the propellant charges are arranged for use in a firing tube weapon without a magazine;

10 that the projectiles are held loosely together in the enclosing unit with holding means which preferably comprise a bayonet mounting or a screw-in mounting;

that each of the casings enclosing the projectiles comprises casing sections mutually aligned parallel one
15 with the other that are so arranged as to be capable of individual activation;

that the unit enclosing the projectiles and the propellant charges is arranged together with a plurality of further enclosing units arranged one
20 alongside the other;

that the enclosing unit is so arranged as to be capable of alignment with the firing tube of a firing tube weapon;

that the enclosing unit is arranged in a carrier
25 that is transported or advanced in relation to the intended target;

that each longitudinal part comprises a mechanical attachment means, preferably a bayonet mounting or a screw-in mounting, in order to assure the
30 aforementioned mountability.

The enclosing unit can be arranged on a weapon firing tube in a weapon, for example a canon. The enclosing unit can be included together with other enclosing
35 units in a weapon magazine, in which the enclosing unit alone or together with one or a plurality of further enclosing units is or are so arranged as to be capable of introduction into the firing tube of the weapon. Each projectile in its position in the enclosing unit

has its rear end facing towards a first space between the rear end and a front part of the subsequent projectile or the rear part of the enclosing unit. The enclosing unit is arranged with a specific spatial arrangement. The propellant charge is preferably applied in a casing arranged between the outer surfaces of the projectiles and the internal surface of the enclosing unit. The casing is provided with recesses to permit the passage of the expansion gases that are generated by the respective initiations of the propellant charges. The aforementioned casing comprises a second space, also referred to below as the casing space between inner and outer parts of the wall, which extends in the longitudinal direction of the casing. Electronic ignition devices are arranged on the aforementioned two spaces for the aforementioned expanded propellant gases and are capable of activation in series, which can take place in a previously disclosed manner. The different projectiles in one embodiment can be mechanically attached one to the other in an initial position, in which case steps are taken to ensure that the necessary acceleration section is available at the front in the enclosing unit. The respective mechanical connections between the mutually arranged projectile parts are detachable in conjunction with the separation of the respective projectile from the remaining parts which form the unit enclosing the projectile parts. The projectiles can be arranged with separating propellant reflector parts or dividing parts between the different projectiles. The aforementioned casing and/or the enclosing unit can comprise longitudinal sections which are separated or prepared for separation at the time of exiting from the firearm. Further embodiments of the idea of invention can be appreciated from the following dependent claims.

On the basis of what is proposed above, a new firearm arrangement can be provided for attacking different types of combat targets. Each paired combination of a

projectile and a propellant charge/propellant load can be connected to the following paired combination of a projectile and a propellant charge/propellant load with the aforementioned mechanical attachment arrangement, which in this case can consist of a bayonet and/or screw-in arrangement. The invention thus involves the assembly of a number of separate modules comprising a projectile and a propellant charge/propellant load, without the need for an external, separate firing tube, where the propellant charges are preferably arranged only externally and enclosing, that is to say not arranged between, the projectiles. The advantage gained by this means is that a shorter weapon is obtained in relative terms, because the included propellant charges do not increase the length of the weapon, which is the case when the propellant charges are arranged between the respective projectiles. The diameter of the weapon is instead increased slightly compared with corresponding firing tube weapons with intermediate loading. In another embodiment, an ammunition device can comprise one of a number of subsidiary lengths comprising a plurality of enclosing units containing the aforementioned plurality of paired combinations of a projectile and a propellant charge/propellant load assembled into a longer firing tube weapon, the length of which is determined by the number of subsidiary lengths of enclosing units. In conjunction with the firing of a leading projectile, this can initiate the advance of the subsequent projectile and the associated propellant charge in conjunction with discharge and can prepare the first space behind the subsequent projectile so that its propellant charge can be initiated for the effective actuation of the forthcoming propulsion of the subsequent projectile, and so on. The first projectile can leave the firing tube before activation of the subsequent projectile is initiated. Alternatively, the subsequent projectile can begin to be activated before the preceding projectile has left the firing tube. The result is that, for each

projectile that is fired, its tube part, that is to say its empty enclosing unit after firing, remains present and is added to a first, foremost empty firing tube part intended to provide a first acceleration section
5 for the first projectile. The growing acceleration section can be compensated for appropriately via custom-made charges which make up for the increasing section length. The firing tube can be either smooth-bored or rifled. The casing for the enclosure of the
10 respective propellant charge preferably exhibits a dual function in that, on the one hand, it provides guidance for the projectile in the enclosing unit and, on the other hand, it contains the propellant charge (gunpowder) for the propulsion of the projectile. The
15 casing can easily be arranged in conjunction with an electronic initiation arrangement, by means of which the serial initiation of the propellant charges in the enclosing unit is effected. The casing can be divided up into serial and/or parallel longitudinal sections.
20 The enclosing unit can also be sectioned or can be provided with sections of such a kind. Preferably more than two projectiles are arranged with associated propellant charges one after the other in the enclosing unit (the firing tube), for example 4-6 projectiles are
25 applied one after the other in the enclosing unit. Ammunition units constructed as mines can also be used.

DESCRIPTION OF THE DRAWINGS

A proposed embodiment of an ammunition device which
30 exhibits the significant characterizing features of the invention is described below at the same time with reference to the accompanying drawings, in which:

35 Fig. 1 depicts a perspective view obliquely from above/from the front of parts of an enclosing unit belonging to the ammunition device according to the invention with a projectile situated inside and a propellant charge for the

projectile in a casing space in a casing arranged between the inner surface of the enclosing unit and the outer parts of the projectile, and

5

Fig. 2 depicts a perspective view obliquely from above/from the front of the application of three projectiles arranged one after the other with associated propellant charges in the enclosing unit.

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DETAILED DESCRIPTION OF THE EMBODIMENT OF THE INVENTION
The enclosing unit is designated in Fig. 1 with 1. A projectile applied in the enclosing unit 1 has the designation 2. The enclosing unit 1 provides a guide for the projectile 2, i.e. as in the function of a conventional firing tube. The projectile 2 can comprise a front nose part 2a and a rear part 2b. For example, in a previously disclosed manner, the rear part 2b can comprise different means which must be activated on the way to and/or on reaching the target. Thus, for example, a fragmentation or shot arrangement can be arranged peripherally in the rear part 2b, which, in a previously disclosed manner, can also comprise an explosive charge not illustrated in Fig. 1. The projectile 2, which is illustrated in Fig. 1, is similarly provided in a previously disclosed manner with an initial 3, also referred to as a booster, of a previously disclosed kind. The enclosing unit 1 can comprise identical projectiles, or projectiles of different kinds but having substantially the same external form. Arranged between the inner wall 1a of the enclosing unit 1 and the outer wall 2c of the projectile 2 is a casing 4 extending axially inside the enclosing unit 1. The aforementioned casing 4 is executed as an inner tube in relation to the enclosing unit 1 and is constructed from two parallel wall-forming tube parts 4a and 4b, which are positioned at a

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distance one from the other in order to form a casing space 4c, also referred to above and below as the second space, radially outside and surrounding the projectile 2. Extending inside this inner tube-shaped casing space 4c is a propellant charge or a propellant load 5, which can consist of gunpowder. The propellant charge 5 extends in a circular symmetrical manner in the longitudinal direction of the enclosing unit 1 along significant parts of the length of the projectile 2, but leaves a third, smaller space or recess 6 of the aforementioned space 4c empty, see below for further details, arranged at the rear end 5a of the propellant charge 5, that is to say the aforementioned third smaller space or recess 6 is arranged at the rear in the casing space 4c or in the propellant charge 5 itself, the function of which is explained in greater detail below. The aforementioned casing 4 can extend along the whole of the significant longitudinal direction of the enclosing unit 1 and can be supported at its ends on bearing components 7 on the front and rear parts of the enclosing unit 1. The aforementioned bearing components 7 can be annular and can exhibit fluting 7a on its external surface. The casing 4 can be provided at the end of the unit concerned with a casing part 4d with a fluted under surface 4e capable of interacting with the corresponding fluting 7a on the external surface of the bearing component 7, that is to say the outside. A corresponding bearing function can be present at the other end (not illustrated) of the casing 4. Alternatively, the casing 4 can be divided up in the longitudinal direction of the enclosing unit 1 into consecutive longitudinal sections A, B, C, also referred to below as casing sections, see Fig. 2, which can be connected together. The rear part 2b of the projectile 2 is provided with a bottom part 2d, with the outside of which, that is to say its external surface 2e, gases that are generated by the initiation of the propellant charge 5 are capable of interacting in a previously disclosed manner for the purpose of

propelling the projectile 2. Present or provided at the rear part 2b, that is to say behind and outside the bottom part 2d, is a first space 8, into which the aforementioned generated propellant gases gain access in conjunction with the aforementioned initiation. The aforementioned first space 8 is present between the external surface 2e of the bottom part 2d and a front surface 9a of a front propellant reflector part 9 arranged on a subsequent projectile or on an end wall, not illustrated here, in the enclosing unit 1, which last-mentioned case is applicable to the rearmost projectile 2' in the enclosing unit 1, see Fig. 2. Also depicted in Fig. 1 is a rear propellant reflector part 10, which front and rear propellant reflector parts 9, 10 together partially fill the first space 8 in an axial direction so that only a narrow gap remains when the projectile 2 is introduced fully into its initial position inside the enclosing unit 1, which is thus not the case in Fig. 1. The front and rear propellant reflector parts 9, 10 comprise a slit 10a, into which slit 10a the propellant gases penetrate at the time of firing a projectile 2 so that the propellant reflector parts 9, 10 are caused to broaden slightly and are thus pressed firmly against the internal surface 4f of the casing 4. Improved friction is obtained between them in this way, at the same time as a reliable gas seal is achieved so that the gas flow rearwards is stopped effectively. The propelling forces from the generated propellant gases will accordingly only influence the foremost projectile so that it is caused to accelerate out from the enclosing unit 1. The propellant reflector parts 9, 10 are so arranged in a previously disclosed manner as to detach themselves from the projectile 2 when this has emerged from the enclosing unit 1. The aforementioned first space 8 directly behind the rear part 2b of the projectile 2 inside the casing 4 is in contact with the small space situated outside the external wall 2c of the projectile 2 and inside the casing space 4c of the casing 4 or the recess 6 behind

the propellant charge 5 via casing openings 4h through the wall-forming casing tube part 4b, which casing openings 4h are covered by one or a plurality of bursting discs 11 so arranged as to give way when the

5 gases generated by the propellant charge 5 exceed a predetermined pressure inside the casing space 4c. The bursting disc 11 in the embodiment illustrated here is hoop-shaped and extends around all the casing openings 4h covering the whole of the internal circumference of

10 the casing 4. The bursting disc 11 can consist of a previously disclosed kind of a previously disclosed material. The casing space 4c in the casing 4 thus provides the third, small space 6 behind the rear end 5a of the propellant charge 5, which small space 6

15 lying outside the projectile 2 is connected to the first space 8 inside the rear part 2b of the projectile 2 behind the bottom part 2d via the casing openings 4h behind the bottom part 2d when the bursting disc 11 gives way to the pressure. The projectile 2 is depicted

20 in Figure 1 in a position in which it is expelled slightly from the enclosing unit 1. Included in the casing 4 on the rear part of the casing space 4c is an ignition device in the form of an ignition ring 12, by means of which the propellant charge 5 is capable of

25 being ignited at its rear parts. The ignition ring 12 be of a previously disclosed kind and makes contact in the starting position of the projectile 2 in the enclosing unit 1 with the end surface of the propellant charge 5, or is enclosed in the rear end 5a of the

30 propellant charge 5. Note that, in Fig. 1, the propellant charge 5 at the top edge of the illustration is cut away slightly to show the position of the ignition ring 12 more clearly. At the bottom edge of the illustration, on the other hand, the ignition ring

35 12 is shown enclosed inside the rear end 5a of the propellant charge 5. The ignition ring 12 is capable of being ignited by means of an ignition system 13, which can consist of or can be included in an electronic ignition system of a previously disclosed kind. In

Figure 1, the designation 10 denotes a separating rear propellant reflector part with an associated additional sealing device, in this case in the form of a sealing ring 14. The sealing ring 14 seals against the internal surface 4f of the casing 4 in the enclosing unit 1. In order to form a longer enclosing unit 1 or to obtain shorter, and thus more easily transported weapon parts, see Fig. 1, the enclosing unit 1 can be assembled from a plurality of longitudinal parts 1A, 1B, etc., to produce a composite enclosing unit 1. Two longitudinal parts 1A, 1B are depicted in Fig. 1, although a greater number can be present, of course. The longitudinal parts 1A, 1B, etc., of the enclosing unit 1 are themselves detachably attached one to the other by means of a mechanical coupling 15, in this case, too, preferably a bayonet or screw-in mounting, see Fig. 2. In one embodiment, the casing 4 can be divided into a number of longitudinal casing sections A, B, C, i.e. which extend in the longitudinal direction of the enclosing unit 1, see Fig. 2. These casing sections A, B, C are absent or can be regarded as having been removed in the exploded view according to Figure 1. Every enclosing unit 1, or longitudinal part 1A, 1B, etc., can thus comprise only a casing section A or a plurality of casing sections A, B, C, etc., in the casing 4, see Fig. 2. In the embodiment with the composite enclosing unit 1, every longitudinal part 1A, 1B, etc., has a casing section A, B or C, etc., which is connected to the adjacent casing section A, B or C, etc., of the next longitudinal part 1A, 1B, etc., via a special connection part 4g during assembly, see Fig. 1. The number of casing sections A, B, C, etc., can be two, three, four or more. Corresponding sectioning into longitudinal parts 1A, 1B, etc., can be performed, as described above, on the enclosing unit 1, and Figure 1 can be regarded in a corresponding manner as indicating that a longitudinal part of this kind is detached from that depicted in Figure 1, which detached longitudinal part is thus capable of being connected to the

longitudinal part 1A at its depicted connection part 4g by means of the aforementioned mechanical connection 15, which mechanical connection 15 in Fig. 1 can be regarded as comprising a schematically depicted screw-
5 in mounting, whereas the mechanical connection 15 shown in Fig. 2 can be regarded as comprising a schematically depicted bayonet mounting.

Figure 2 indicates when the projectile 2 described in
10 the foregoing text has adopted the starting position inside the enclosing unit 1. The drive reflector parts 9, 10 and the sealing ring 14 are drawn into the enclosing unit 1 in this way. The small recess 6 is present at the rear end 5a of the respective propellant
15 charge 5, and the propellant gases expanding from the propellant charges 5 are able to penetrate down into the first space 8, that is to say the gap between the external surface 2e of the bottom part 2d of the rear part 2b and the front surface 9a of the front drive
20 reflector part 9 on the following projectile. The width of the gap 8 in this case is of an order of magnitude such that access by the expanding propellant gases gains access to the aforementioned external surface 2e on the bottom part 2d and the front surface 9a on the
25 drive reflector part 9. The enclosing unit 1 can be made from a material of a disposable nature and having different dimensions adapted to the type of ammunition in question. The casing 4 can be made from aluminium, and the projectiles 2 can be made in a previously
30 disclosed manner. The enclosing unit 1 can be included together with other enclosing units 16 and arranged, preferably parallel to and alongside one another in a grenade launcher comprising a multi-tube arrangement, for example similar to the so-called Stalin organ that
35 was used during the Second World War. A second enclosing unit of this kind that is arranged parallel to and alongside the first enclosing unit 1 is symbolized in Figure 2 by the designation 16. The ammunition device itself can comprise an enclosing unit

that is capable of alignment with an existing firing tube, for example in a canon, that is to say it can comprise an enclosing unit 1 that is capable of being introduced into an existing firing tube, although the
5 ammunition device can similarly be assembled comprising only the different other parts described above with the respective enclosing unit or longitudinal part (or additional, preferably parallel units for a multi-firing tube arrangement) without an additional,
10 externally enclosing existing firing tube. Guiding of the enclosing unit 1 in relation to an existing firing tube can take place in a previously disclosed manner. In Figure 2, a firing tube weapon is symbolized with the designation 17, and its firing tube with the
15 designation 18.

The embodiment of an ammunition arrangement according to the invention described above is not restricted to the embodiments illustrated above by way of example,
20 but can be subjected to modifications within the scope of the following patent claims and the idea of invention. For example, the one or more enclosing units can be arranged in a carrier that is transported or propelled in relation to the intended target, for
25 example an unmanned aircraft, a UAV (Unmanned Aerial Vehicle), a missile, an aircraft, a carried or released weapons capsule (pod) containing one or more weapons, etc.

PATENT CLAIMS

1. Ammunition device having two or more projectiles
5 (2) and individual propellant charges (5) associated
therewith, for example charges of gunpowder, the
respective projectile (2) having allocated to it a
propellant charge (5) substantially surrounding the
projectile (2) arranged with means (12, 13) for
10 individual initiation, the projectiles (2) and their
surrounding propellant charges (5) being arranged on
after the other in an enclosing unit (1), and the
projectiles (2) at the time of the individual
15 initiations of the propellant charges (5) being so
arranged as to leave the enclosing unit (1) in its
longitudinal direction, characterized in that the
enclosing unit (1) comprises a plurality of
longitudinal parts (1A, 1B, etc.) that are so arranged
as to be capable of assembly one to the other to
20 produce a longer weapon.

2. Ammunition device according to Patent Claim 1,
characterized in that the enclosing unit (1) is so
arranged as to be applicable to an existing weapon
25 firing tube (18).

3. Ammunition device according to Patent Claims 1 or
2, characterized in that the enclosing unit (1)
together with other enclosing units (16) is so arranged
30 as to be included in a weapon (17) comprising a multi-
firing tube arrangement.

4. Ammunition device according to one of the
preceding patent claims, characterized in that the
35 respective projectile (2) in its position in the
enclosing unit (1) has a bottom part (2d) on the rear
part (2b) of the projectile (2) facing towards a first
space (8), preferably executed as a gap, between the
bottom part (2d) and a front surface (9a) belonging to

or allocated to either the subsequent projectile (2), or the enclosing unit (1), where the latter case applies to the rearmost projectile (2').

5 5. Ammunition device according to Patent Claim 4, characterized in that the first space (8) includes means (4h, 11), on initiating the propellant charge (5) of the projectile (2), for giving the generated propellant gases access to the first space (8) and
10 thereby causing the projectile (2) to be driven from the enclosing unit (1).

6. Ammunition device according to Patent Claims 4 or 5, characterized in that access to the first space (8)
15 by the generated gases is so arranged as to take place via casing openings (4h) covered by one or more bursting discs (11) so arranged as to give way at a predetermined gas pressure value.

20 7. Ammunition device according to one of Patent Claims 4, 5 or 6, characterized in that the ignition zone (12) of the propellant charge (5) is arranged in a second space/casing space (4c) radially outside the first space (8).

25 8. Ammunition device according to one of Patent Claims 4-7, characterized in that the respective propellant charge (5) is arranged in a casing (4), which casing (4) is ring-shaped in its cross section
30 and is preferably fluted (4e) on parts (4d) of its inner surface, which casing (4) is situated outside the projectile (2) and is open rearwards towards the first space (8).

35 9. Ammunition device according to Patent Claim 8, characterized in that the casing (4) is executed as an inner tube in relation to the enclosing unit (1), i.e. comprising a second space/casing space (4c), and that a third, smaller space or recess (6) which exhibits

inward-facing casing openings (4h) for the gases generated by the propellant charges (5) is arranged next to the first space (8).

5 10. Ammunition device according to Patent Claim 9, characterized in that the second space/casing space (4c) is divided in its longitudinal extent into casing sections (A, B, C) each comprising a casing space (4c) for its own propellant charge (5) and means (12, 13)
10 for the individual initiation of these propellant charges (5).

11. Ammunition device according to Patent Claims 8, 9 or 10, characterized in that the casing (4) provides a
15 guide for the projectile (2) as it is propelled from the enclosing unit (1).

12. Ammunition device according to one of Patent Claims 4-11, characterized in that the front space (9a) belonging to the subsequent projectile (2') constitutes
20 the front surface (9a) of a propellant reflector part (9) that is provided with sealing means (14) against an inner surface (4f) inside the enclosing unit (1).

25 13. Ammunition device according to one of Patent Claims 1-12, characterized in that the respective projectile (2) is so arranged as to leave the enclosing unit (1) before firing of the subsequent projectile (2) takes place.

30 14. Ammunition device according to one of Patent Claims 1-13, characterized in that the subsequent projectile (2) is so arranged as to be capable of being actuated for its propulsion from the enclosing unit (1)
35 before the preceding projectile (2) has left the aforementioned enclosing unit (1).

15. Ammunition device according to one of Patent Claims 2-14, characterized in that it is so arranged as

to be capable of being fired by means of a large-bore firing tube weapon (17), for example a firing tube weapon with a bore of 20-40.

- 5 16. Ammunition device according to one of Patent Claims 2-15, characterized in that the projectiles (2) and the propellant charges (5) are arranged for use in a firing tube weapon (17) without a magazine.
- 10 17. Ammunition device according to one of the preceding patent claims, characterized in that the projectiles (2) are held loosely together in the enclosing unit (1) with holding means which preferably comprise a bayonet mounting or a screw-in mounting.
- 15 18. Ammunition device according to one of Patent Claims 1-17, characterized in that each of the casings (4) enclosing the projectiles (2) comprises casing sections (A, B, C) mutually aligned parallel one with the other that are so arranged as to be capable of
20 individual activation.
19. Ammunition device according to one of Patent Claims 1-18, characterized in that the unit (1)
25 enclosing the projectiles (2) and the propellant charges (5) is arranged together with a plurality of further enclosing units (16) arranged one alongside the other.
- 30 20. Ammunition device according to one of the preceding patent claims, characterized in that the enclosing unit (1) is so arranged as to be capable of alignment with the firing tube (18) of a firing tube weapon (17).
- 35 21. Ammunition device according to one of the preceding patent claims, characterized in that the enclosing unit (1) is arranged in a carrier that is transported or advanced in relation to the intended

target.

22. Ammunition device according to one of the preceding patent claims, characterized in that each
5 longitudinal part (1A, 1B, etc.) comprises a mechanical attachment means (15), preferably a bayonet mounting or a screw-in mounting in order to assure the aforementioned mountability.

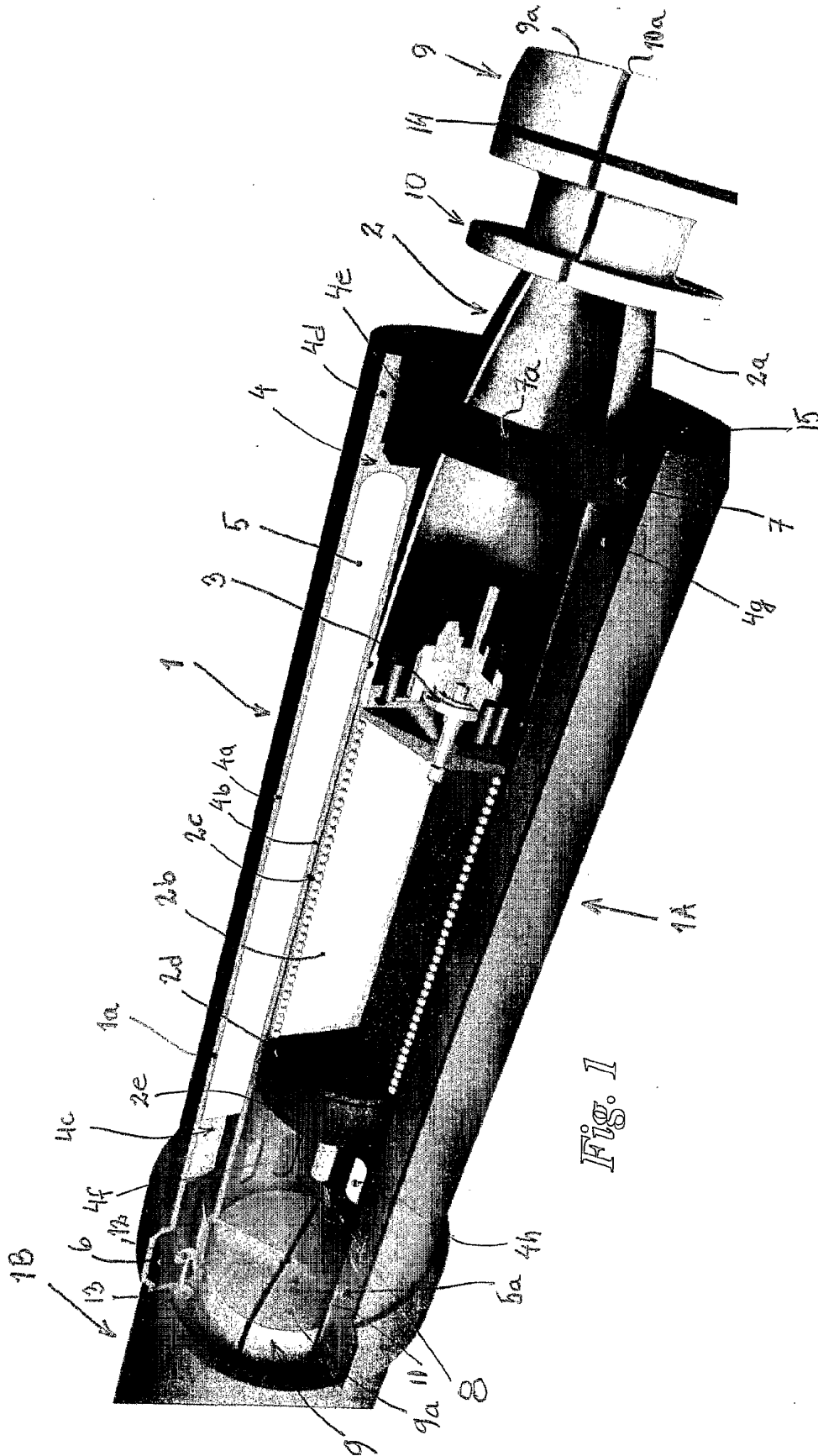


Fig. 1

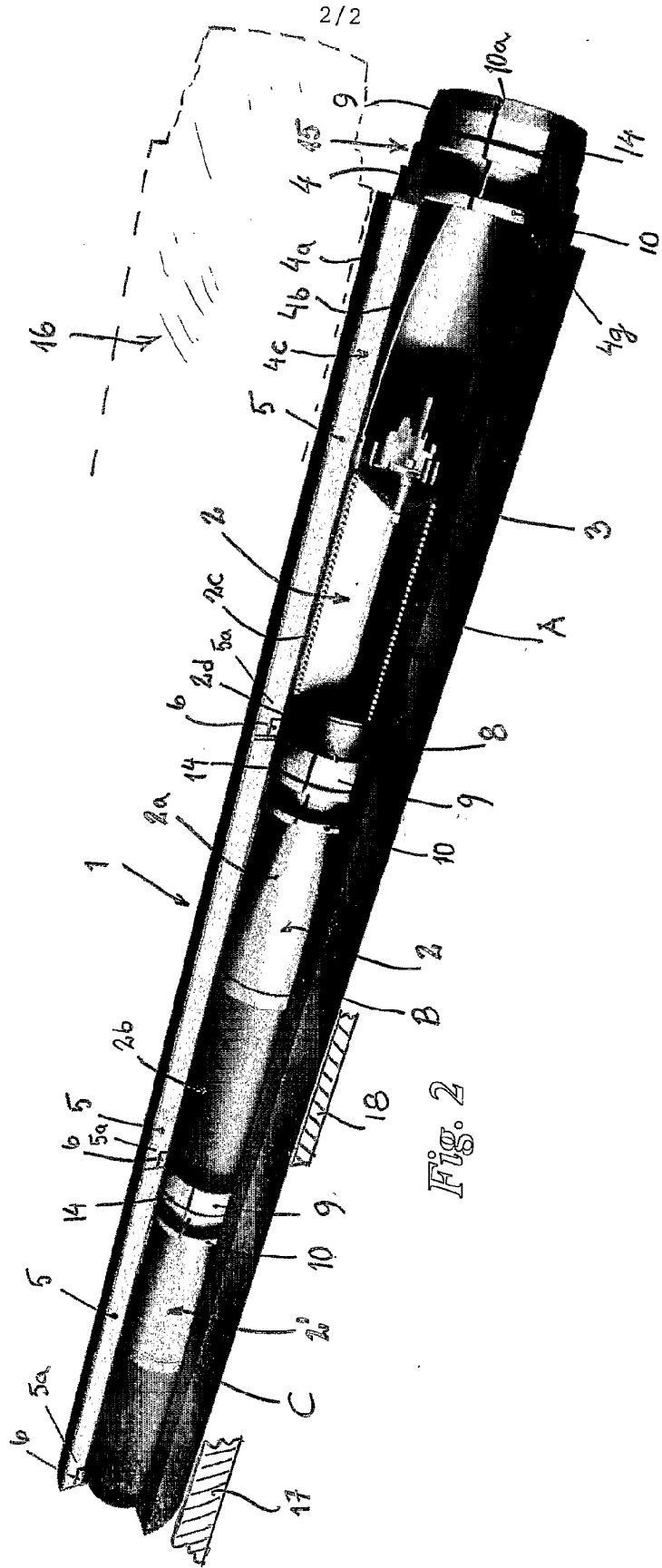


FIG. 2