(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 150 229**
A1

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **84100331.2**

(22) Date of filing: **13.01.84**

(51) Int. Cl.⁴: **F 42 B 11/20**, F 42 B 7/10, F 42 B 31/00

(43) Date of publication of application: **07.08.85**
Bulletin 85/32

(84) Designated Contracting States: **AT BE CH DE FR GB IT LI LU NL SE**

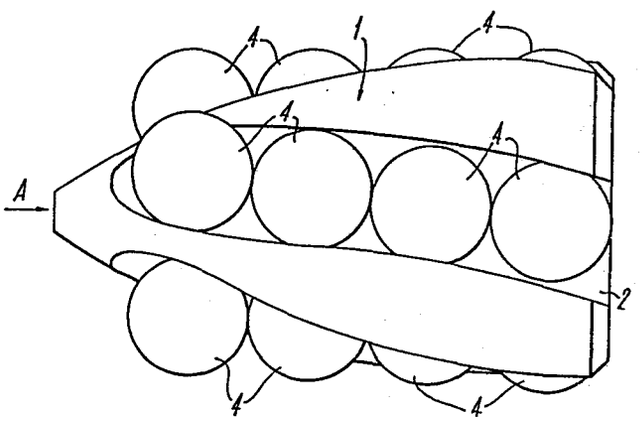
(71) Applicant: **BRANSCOMB CORPORATION N.V., De Ruyterkade 58a, Curacao Netherlands Antilles (NL)**

(72) Inventor: **Sullivan, Leroy James, 19567 Vasile Circle, Huntington Beach California 92646 (US)**

(74) Representative: **Brunner, Michael John et al, GILL JENNINGS & EVERY 53-64 Chancery Lane, London WC2A 1HN (GB)**

(54) **Bullet.**

(57) A bullet or slug having helical flutes or grooves (2) of a "U" shaped cross-section having a plurality of spherical bodies (4) positioned in each groove to stabilize the bullet or slug as it passes down the non-rifled barrel through which it is fired.



EP 0 150 229 A1

LEROY JAMES SULLIVAN

BULLET

The present invention relates to ammunition and is particularly useful in ammunition for use in conventional small arms weapons having non-rifled barrels.

In my European application 83106054.6 I described a novel ammunition round comprising a casing for containing a propelling charge, a bullet which has a plurality of flutes or grooves in its outer surface extending helically around or substantially parallel to the longitudinal axis of the bullet, and a sabot into which the bullet seats and which seals the bullet into the casing, the sabot having at least a part with a diameter greater than the diameter of the bullet and a plurality of fingers engaging respective ones of the grooves in the bullet to cause the bullet to spin as the sabot is rotated by engagement with rifling grooves in a barrel through which the round is fired.

A second aspect of the invention described in that application is an ammunition round comprising a casing for containing a propelling charge, a slug which has a plurality of flutes or grooves in its outer surface extending helically around or substantially parallel to the longitudinal axis of the slug, and a sabot into which the slug seats and which seals the slug into the casing, the sabot having a plurality of figures seated in respective ones of the grooves in the slug, the fingers having a thickness substantially the same as the depth of the grooves and extending substantially the length of the slug thereby to stabilize the slug and prevent it from tilting off axis as it travels down the barrel through which it is fired.

The prior application also included a claim to a bullet which has a plurality of flutes or grooves in its outer surface extending helically around or substantially parallel to the axis of the bullet.

Various examples of ammunition rounds and bullets in accordance with that invention were described in the patent specification.

According to the present invention, a further example of an ammuniton round comprises a casing for containing a propelling charge and a bullet or slug which has a plurality of flutes or grooves in its outer surface extending helically around or substantially parallel to the longitudinal axis of the bullet, characterised in that each of the flutes or grooves is substantially "U"shaped in cross-section and contains a plurality of spherical bodies having a diameter substantially equal to that of the cross-section of the grooves, the spherical bodies being arranged in rows in each of the grooves to support and stabilize the bullet or slug in a barrel through which it is fired.

The invention also includes a bullet or slug which has a plurality of flutes or grooves in its outer surface extending helically around or substantially parallel to the longitudinal axis of the bullet, characterised in that each of the flutes or grooves is substantially "U"shaped in cross-section and contains a plurality of spherical bodies having a diameter substantially equal to that of the cross-section of the grooves, the spherical bodies being arranged in rows in each of the grooves to support and stabilize the bullet or slug in a barrel through which it is fired.

This embodiment, not previously described, is intended for use primarily as a shotgun slug and the bullet or slug may be made of steel or, as conventional, of lead. The spherical bodies lying in the grooves may be formed of steel, plastics or any other suitable material.

For civilian use the slug will preferably be formed of lead, for use e.g. when deer hunting, with a normal shotgun.

A military version would be formed of steel, with steel balls in the grooves, thus providing a multiple projectile round. The balls scatter like a shotgun for short range and the central streamlined projectile has long range energy and accuracy, so the round can be used as in applications normally requiring a rifle.

As in my above European application the flutes or grooves reduce frontal area and wind resistance to aid streamlining and form fins to help stabilize the slug in flight. Unlike the previous examples, however, the slug is not spun in the barrel and therefore requires no sabot with fingers to engage the flutes to transfer the spin. Instead the balls in the grooves prevent the streamlined slug, with its ogival shape, from tilting in the barrel. Normal shotgun slugs have a cylindrical shape to prevent tilting, but are not streamlined.

The balls stabilize the slug and separate from it equally well whether the grooves are helical or parallel to the axis of the slug, but if they are helical then windflow through the grooves after separation of the balls begins to spin the slug and stabilize its flight to improve accuracy.

One example of a slug for an ammunition round according to the present invention is now described with reference to the accompanying drawings in which:-

Fig. 1 is a side elevation of the slug itself,

Fig. 2 is a side elevation of the slug with the spherical bodies mounted on it, and

Fig. 3 is an end elevation on arrow A in Fig. 2.

A steel slug 1 of conventional ogival outline has four helical flutes 2 equiangularly positioned around its central axis 3. In each of the grooves 2

four spherical bodies 4 are positioned, each of the spherical bodies 4 having a diameter substantially the same as although slightly less than the diameter of the cross-section of the flute 2. The spherical bodies are also preferably made of steel and may be conventional ball bearings. The circular sectioned wall of the flutes 2 supports the spherical bodies 4 which are retained within the flutes 2 in the radial direction, prior to firing by the wall of the casing, and after firing by the wall of the barrel.

The rear of the slug 1 may be abutted by a plug (not shown) in order to provide a satisfactory seal to the casing (not shown) to prevent the blast from the explosion of the charge passing around the sides of the slug.

CLAIMS

1. An ammunition round comprising a casing for containing a propelling charge and a bullet or slug (1) which has a plurality of flutes or grooves (2) in its outer surface extending helically around or substantially parallel to the longitudinal axis of the bullet or slug (1), characterized in that each of the grooves is substantially "U"shaped in cross-section and contains a plurality of spherical bodies (4) having a diameter substantially equal to that of the cross-section of the groove, the spherical bodies being arranged in rows in each of the grooves to support and stabilize the bullet or slug in a barrel through which it is fired.

2. A bullet or slug (1) which has a plurality of flutes or grooves (2) in its outer surface extending helically around or substantially parallel to the longitudinal axis of the bullet or slug (1), characterized in that each of the grooves is substantially "U"shapedin cross-section and contains a plurality of spherical bodies (4) having a diameter substantially equal to that of the cross-section of the groove, the spherical bodies being arranged in rows in each of the grooves to support and stabilize the bullet or slug in a barrel through which it is fired.

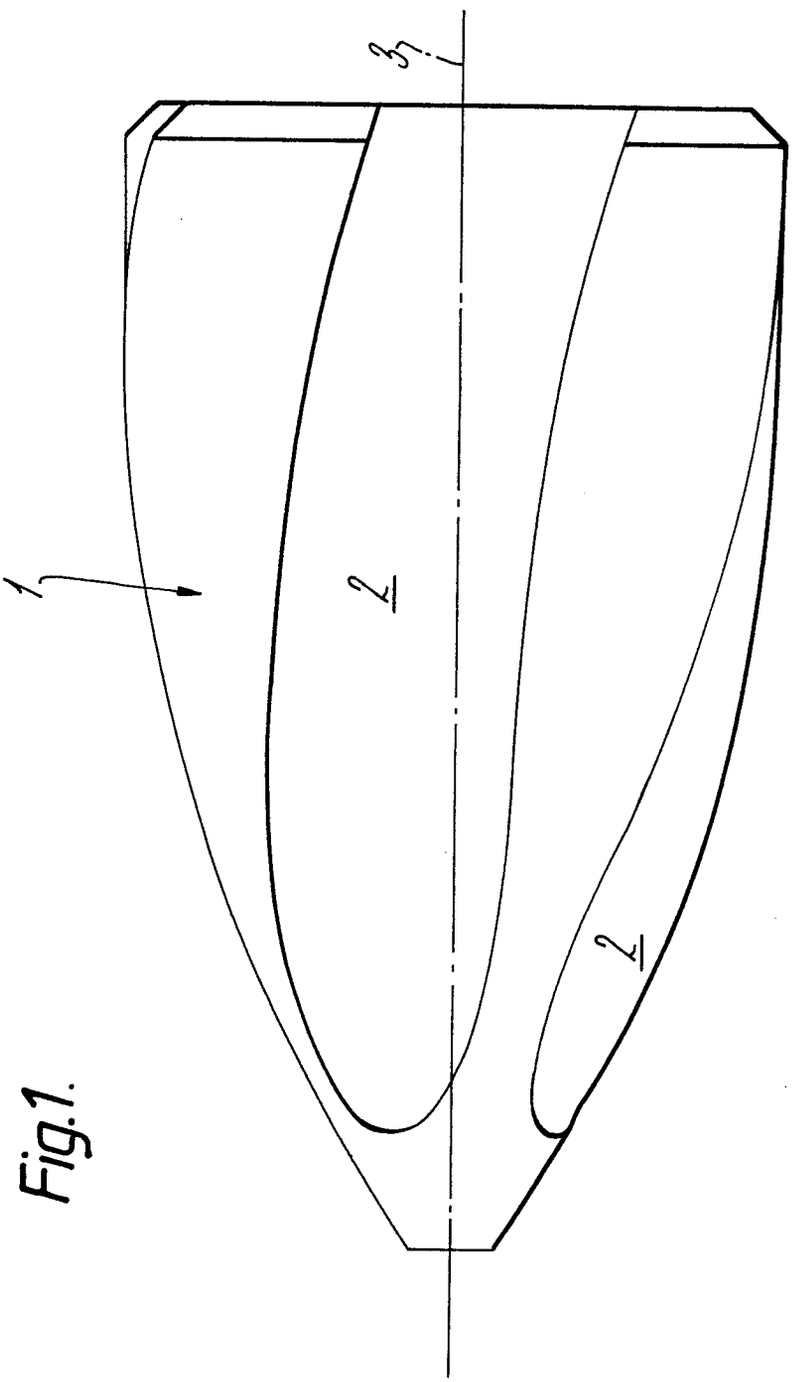


Fig.1.

Fig.3.

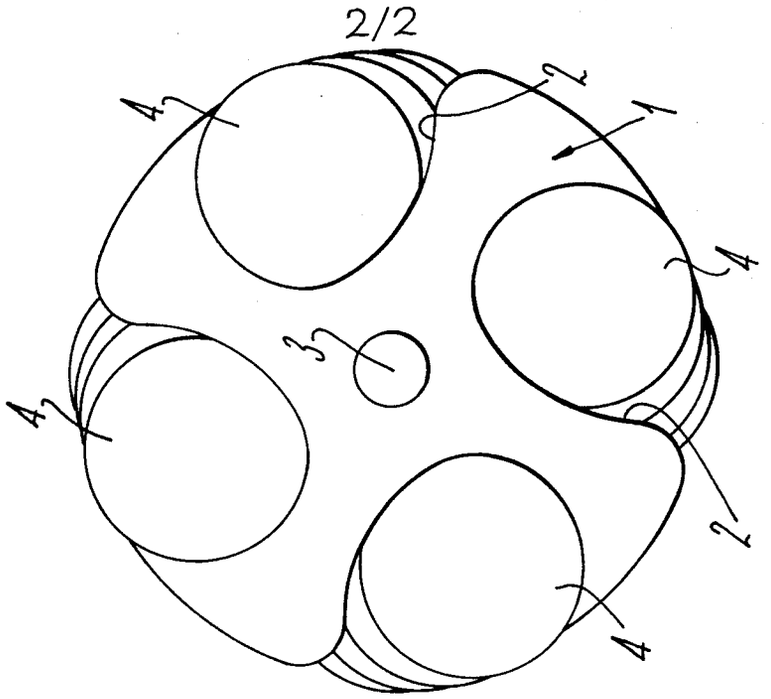
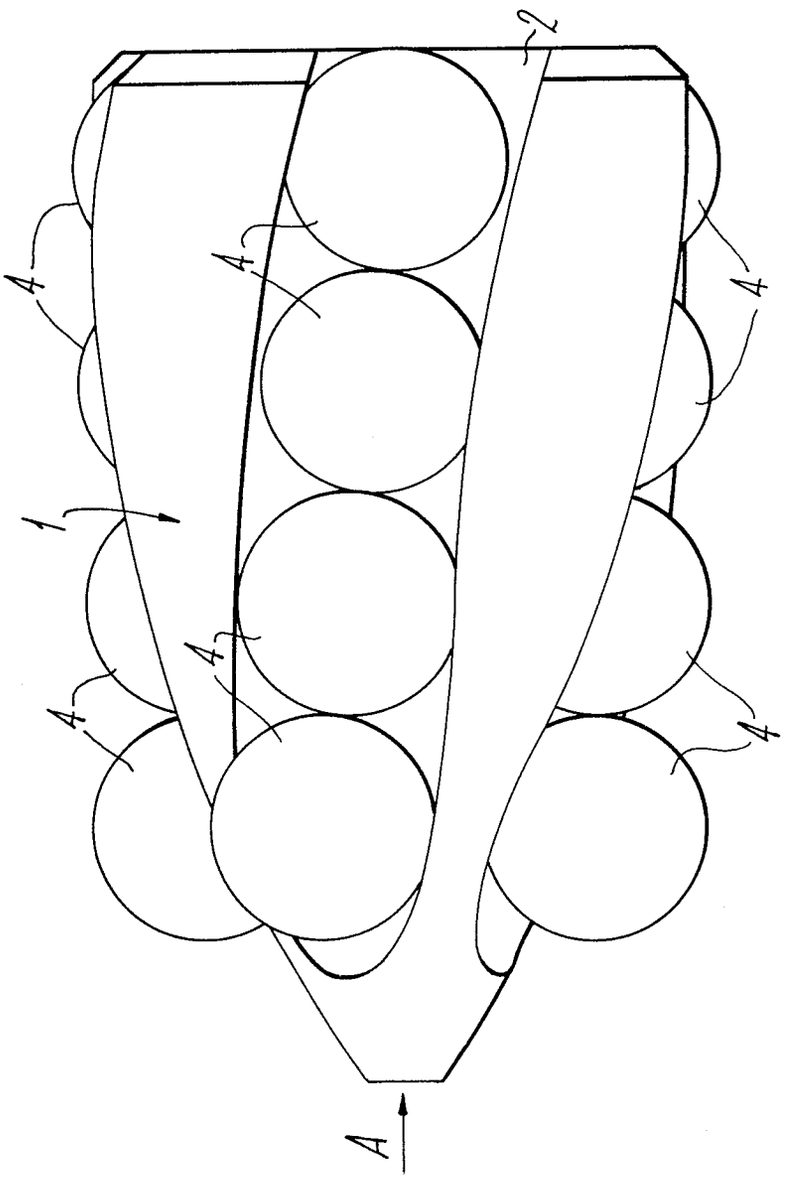


Fig.2.



European Patent Office

EUROPEAN SEARCH REPORT

0150229
Application number

EP 84 10 0331

DOCUMENTS CONSIDERED TO BE RELEVANT

	Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
2	X	FR-A-1 124 740 (EMOND) * Figures 1-3; abstract *	1,2	F 42 B 11/20 F 42 B 7/10 F 42 B 31/00
2	A	DE-C- 583 098 (THÜRMER)		

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

F 42 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24-08-1984	FISCHER G.H.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO Form 1503. 03.82