

## AIMING SYSTEM FOR PORTABLE WEAPONS

Main Technological Area —> Sensors

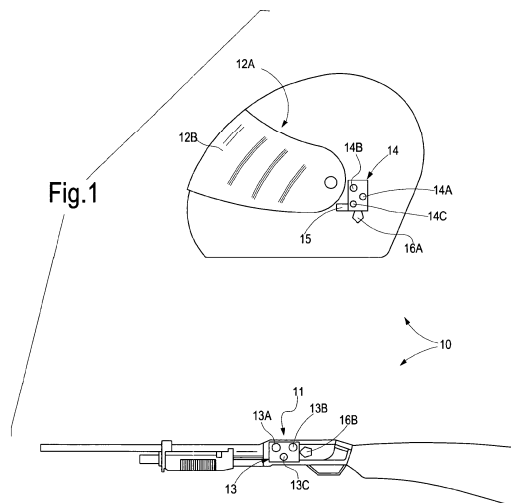
Keywords —> View, Targeting, Aiming, Firing, Tracking, Video

Conventional aiming systems of portable weapons oblige the user to use display apparatus constrained to the weapon. Both in the standard mechanical aiming system, for which two references are collimated along the axis of the barrel, and in advanced systems that use optical paths, IR sensors and other types of device, it is in fact necessary to place the eye, and therefore the face, in proximity of an eyepiece integral with the weapon. To perform this operation effectively, it is not possible to provide complete protection of the face, which therefore remains exposed, in the case of warfare, to enemy fire.

The object of the invention is an aiming system for portable weapons that is able to prevent exposure of the user during the aiming step, while at the same time maintaining a high aiming precision.

### TECHNICAL SPECIFICATIONS

This patent describes a system that makes possible to perform aiming operations by means of a helmet equipped with a visor placed in front of the eyes of the user, onto which an aiming reticle is dynamically projected. A set of sensors are located both on the weapon and on the helmet, and send data to an electronic device which correlate position and inertial data in order to define mutual position, orientation and distance between the helmet and the weapon. Data processing are performed in such a manner as to use these values in the calculation and representation of the firing trajectory of the weapon in the visor.



**Figure 1 – Sensors/visor/processing unit displacement**

This way, portable weapons are able to prevent exposure of the user during the aiming step while at the same time maintaining a high aiming precision, also in different circumstances given as examples:

- If the user is inside an armored vehicle, when the weapon must be pointed out of the window but he/she has to remain protected.
- If the user is taking cover behind an obstacle, and holding the weapon either above the head or at the side, without the need to peep out (even to the smallest extent possible) to be able to view the target.
- If the user is moving forward holding the weapon at shoulder height to be able to move as fast as possible, and is surprised by a sudden threat.

**INNOVATION/ADVANTAGES**

- Prevent exposure of the user during the aiming step, maintaining a high aiming precision
- Correctly display the firing point on the visor
- Firing point of the weapon is always visible on the visor, regardless of how weapon and user's head are moved
- Soldier's head, face, neck and throat can be protected at all times using a full face helmet with anti-shrapnel visor, so as to reduce trauma in an area that is currently the most vulnerable to any form of attack

**FIELDS OF APPLICATION**

<b><i>Police forces, public safety</i></b>	Aiming and shooting systems in operative scenario on board of armoured vehicles or taking cover behind an obstacle
<b><i>Simulation/Videogames</i></b>	Augmented Reality combat scenario, shooting ranges
<b><i>Cinematography</i></b>	Documentaries, action scenes, remote controlled steadycams
<b><i>Industry</i></b>	Borehole inspections, hostile work environment investigation
<b><i>Science</i></b>	Speleology, geomorphology

**PATENT INFORMATION**

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**IPC Codes** - F41G3/16, F41G3/165, F41G3/225

**Active worldwide applications**

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National Extensions: Czech Republic – Germany – France – Italy - United Kingdom – Turkey

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**Leonardo internal code**

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