

## Sling - Laser air defense system

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Today, military superiority is further achieved through air combat capability or air defense. But the problem that questions this military superiority is the weakness of defense systems in the ability to repel various air strikes (aircraft, UAVs, missiles, etc.). High costs, poor interception and Destruction, low speed and accuracy of some of these systems, etc. are major problems that sometimes cause their inefficiency. Designing a new system that addresses these weaknesses and problems could bring complete military superiority in this area.

In this regard, the following Initial concept is introduced as an efficient and low-cost system to deal with various types of air threats.

This system consists of two general parts. An electric motor and a laser device. The electric motor required for this system is a typical electric motor with a rotation speed of 30,000 to 40,000 rpm, which is used in many home and industrial appliances, and the laser device is the same laser available on laser cutting machines with a power of 3kW - equipment that easily Are available.

Theoretically - based on numerical calculations - this system (a combination of the two devices mentioned) can throw a bullet (metal ball) made of tungsten carbide or other metal with a mass of 2 grams at a speed between 1700 to 1800 meters per second, which Its collision with any object can cause serious damage to that object.

The way this system works is that the bullet enters the chamber through the channel installed in the center of the base of a cylindrical chamber with a height of 2 cm and a radius of 2 cm which is connected to the electric motor, and after the necessary acceleration, with initial speed 50 to 80 meters per second, immediately after opening the valve embedded in the body of the outer cylinder, which is tangential to the inner cylinder, is thrown at the firing tube - like a stone coming out of a sling - (the lateral surface of the inner cylinder alternately has incisions It is about the diameter of the bullet that when the chamber rotates, the bullet is placed between them and the outer cylinder prevents it from leaving the chamber until the valve is opened). Immediately after entering the firing barrel,

the bullet is hit by a laser device installed at the beginning of the barrel, which is located exactly at the top of the outer cylinder valve and is set with a precise focal length inside the barrel (with a power of 3 kW). And from the end of the firing barrel, it is fired towards the target. (Figure 1)

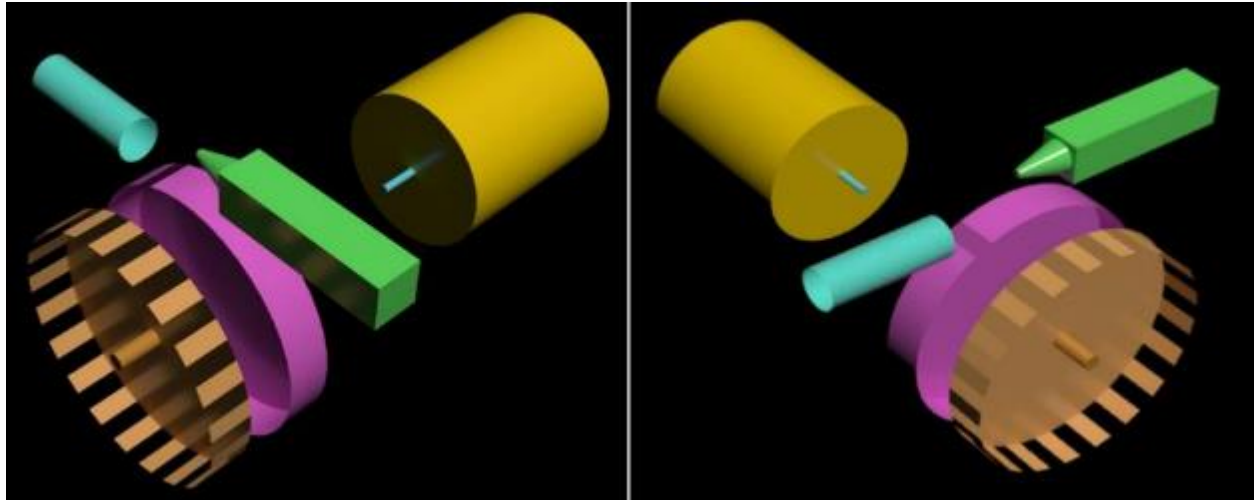


Figure 1: As mentioned, this idea is applicable and practical at least on paper.

Although according to the mentioned parameters, the effect of the electric motor on the final output is not significant, but the mentioned parameters are minimal and the proportional and accurate change of the parameters can bring more output. The flexibility of this system in combining several separate devices to increase the final velocity of the projectile is not limited to the combination of the two mentioned devices, and by combining a linear motor with this system (with or without the presence of an electric motor), the necessary efficiency can also be achieved. Creating a structure to launch a very small object at very high speed is the main goal of this idea and system, and the use of only one device or a combination of several devices is not important in the final goal.

In general, the benefits that such a defense system can bring based on the goal mentioned above include the following:

- 1- Very low cost of construction and use of these systems (due to the lack of need for expensive and special equipment and materials)

- 2- Very high firing speed and accuracy
- 3- Unlimited shooting ability
- 4- Inability to track and destroy the fired object (due to its small size, speed and number of bullets)
- 5- No detection by radars (due to small bullets)
- 6- Ability to deal with all types of air threats, regardless of gender and type
- 7- Destroying air threats at a far distance from the system
- 8- Flexibility in arranging the arrangement of several systems together to increase the defense factor (Suggested arrangement: hexagonal arrangement for maximum effect)

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