USE OF FIGHTER AIRCRAFT IN DEFENSE WORK

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Annotation. A fighter is a military aircraft designed primarily for the destruction of enemy air targets and air troops. It is used to achieve superiority over the enemy in the air, as well as to monitor bombers, transport aircraft, civil aviation aircraft and protect ground objects from enemy aircraft. Typically, fighters are used to attack land and sea targets.
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Despite its offensive name, the fighter belongs to the defensive types of weapons, fighter aviation has no special offensive value. However, now, with an increase in the mass and mass of these machines (and, accordingly, their greater carrying capacity, that is, the load of missiles and bombs), they were able to effectively attack targets on Earth. and in the conditions of modern local conflicts, fighters can be used to destroy ground (ground) targets.

Some assume that in the future, unmanned aerial vehicles (UAVs) can take on the role of fighters, the development of which is actively underway, and they are already successfully used to destroy ground targets. It reduces the loss of flight personnel, simplifies, eases and reduces the cost of aircraft, and also removes restrictions on overloads installed within the limits of the human body.

The appearance of fighter aircraft became possible thanks to the internal combustion engines installed on them, and the development of propeller and jet aircraft is largely determined by the perfection of the engines.

Classification.

Different countries (previously) adopted their own fighter aircraft classifications, below is the classification of the RF Armed Forces:

By function:

- Front-line fighter-aircraft are designed to gain air superiority by destroying enemy aircraft in maneuverable air combat day and night in all meteorological conditions. It is also used to support ground forces against fire.
- Multipurpose fighter-aircraft are designed to destroy both enemy aircraft and ground forces. When designing such aircraft, stealth technologies are used, which provide an opportunity to secretly destroy enemy aircraft, as well as strike at significant enemy targets on Earth. Designed to fight around the clock in all meteorological conditions.
- Fighter-interceptors are designed to protect ground targets by destroying them with rocket weapons at long distances from targets protected from air attack weapons (aircraft, cruise missiles). The same tasks are performed using air defense.

- Carrier — based fighter-aircraft designed to be placed on the deck of aircraft carrier ships.
- Multifunctional fighter-designed to perform all tasks assigned to fighters of all types and types.

Note: as for the Russian Air Force, with the adoption of 4th generation aircraft (MiG-29 and Su-27), the border between fighter aircraft was removed. These aircraft will be able to successfully cope with all the tasks assigned to front-line aviation, air defense aviation (as a fighter-interceptor), carrier-based aviation (in appropriate modifications adapted to the conditions of deployment on board the ship).

The history of fighter aircraft.

The first World War.

The first air battles took place during the first World War. At the same time, for the first time there was a need for special aircraft designed to destroy air targets.

Figure 1. Restored I-15 bis, 2004

The first fighter aircraft were used for reconnaissance, the flight speed was 150 km / h and the same aircraft with two crew members, but the navigator took with him not a camera, but heavy objects — weapons, metal rods and even weights. Noticing the enemy aircraft, the pilot flew over him from above and threw the cargo of navigation over him. Soon this method was improved — the navigator took a light machine gun or pistol with him and fired at the pilot of an enemy aircraft. Later, a new device was invented — a tower was installed on the back of the pilot, which allows you to turn the machine gun to 360 degrees. Now the shooter could shoot in the rear hemisphere, but the most comfortable frontal zone for the fighter was removed.

The first fighters appeared at the beginning of the first World War.

At that time, the machine guns were not reliable enough to be mounted on the wings, and the rotating propeller prevented the installation of a course Machine Gun. However, the French pilot Roland Garros soon invented a system that allows you to shoot through a rotating propeller. The device consists of metal corners fixed at the bottom of the propeller blades, when touched, the bullet moves to a safe area for the pilot and the aircraft. The disadvantage of this device was the loss of 7-10% of the bullet. This problem was solved shortly after Anton Fokker created a shooting synchronizer that allows you to shoot from one spiral plane to another without damage.

It should also be noted that the standard weapons of fighters during the first World War were machine guns of a pair of rifle calibers, which lasted until the mid-1930s. However, even some fighters of the late 1930s, for example, the initial modifications of the Ki-43, adhered to such a "standard".

Interwar period

In the interwar period, aviation from plywood biplanes was transformed into full-metal monoplanes with a closed cockpit. The first full-metal fighter was the German fighter Junkers DI.

The fighters of the late 1930s developed a type equal to a speed of 450 km / h and were armed with several machine guns.

World War II fighters

At the beginning of World War II, fighter aviation was a well-formed class of military equipment. As a rule, the main forces of the world of that time had several main types of fighters, which differed from each other both in flight characteristics and in tactics of use. So, in Germany there were Bf-109 and Me-110 fighters of various modifications, in the Soviet Union — I-16 and I-153, in the UK — Spitfire and Hurricane fighters.

Figure 2. "Supermarine Spitfire", World War II fighter

Some other countries, in particular the United States, Japan and France, have also made significant progress in the creation of fighters. There were also modern modifications and types of fighters that have not yet gained popularity, but were seriously developed during the war. So, with the beginning of hostilities on the Eastern Front, the Soviet Union acquired new Yak-1, MiG-3, LaGG-3 fighters, and during the war years Germany created and developed Focke-Wulf Fw-190 fighters.

When hostilities began in the European theater of practice, there was no clear definition of which of the main parameters of the fighter — speed or manpower — was more important to him. This was due to a significant difference in the schemes in which the gliders of the pre-war soldiers were built. So, the Soviet I-153 Chaika was a biplane, and the previous I-16 was a monoplane. The German Me-109 and Me — 110 differed in the number of engines-from one to two, respectively. However, the experience of conducting active combat operations using fighter aircraft very quickly turned the scales into the direction of the single-engine monoplane scheme. Thus, during the Great Patriotic War, large industrial forces did not release a single new modification of biplane fighter aircraft, and only one twin-engine fighter received relative development from American Light, which was largely due to its peculiarities in Pacific operations.

Post-war development

The 1960s were marked by improvements to work with the Air Force, which were the main aviation forces in the world of supersonic fighter aircraft, which, despite all the differences in order and flight weight, had a number of unifying characteristics. They have a speed twice the

speed of sound, and the ceiling is 18-20 km and are equipped with air radar stations and guided air-to-air missiles. Such a coincidence was not accidental-the development of technology continued in the same direction, since bombers with nuclear bombs were considered a serious threat to security on both sides of the Iron Curtain. Accordingly, the requirements for new fighter aircraft were formulated, the main task of which was to capture targets that would not move at high speed at any time of the day and in any weather.

As a result, a number of aircraft appeared in the USA, the USSR and Western Europe, which were later classified as second-generation fighter aircraft in terms of a combination of location characteristics and flight performance. The constantly increasing cost of fighter aircraft emphasized the need to reduce the absolute size of the fleet, while expanding the functions of aircraft. In addition, the tactics of conducting an air war have changed before our eyes — the wide development of anti-aircraft missile systems has led to the disappearance of the doctrine of the mass invasion of high-altitude bombers. In strike operations, the main emphasis is increasingly placed on tactical aircraft with nuclear weapons, capable of overcoming the line of defense from air attack weapons at high altitudes.

To counter them, third — generation fighter aircraft were intended-the MiG-23, Mirage F-1, J-37 Viggen the release of these machines was planned for the early 1970s, along with improved versions of the MiG-21 and F-4. At the same time, design research began on the creation of a fourth — generation fighter aircraft on both shores of the ocean-a promising combat vehicle that will form the basis of the Air Force in the next decade.

Figure 3. F-4 Phantom II

The United States was the first to begin to solve this problem, where in 1965 the question arose about the creation of a successor to the F-4C Phantom tactical fighter. In March 1966, the FX (Fighter Experimental) program was launched. The design of the aircraft according to the established requirements began in 1969, when the aircraft received the designation F-15 "Eagle" (English Eagle). MacDonnell Douglas, who won the design competition on December 23, 1969, received a contract for the construction of an experimental aircraft, and in 1974, for the first time, the F-15A Eagle and Sparky TF-15a (F-15b) were produced. Later, fighter aircraft appeared.

In 1969, the fourth generation of Soviet fighters began to be developed, including Su-27, MiG-29, MiG-31 and their modifications.

The world's first fifth-generation fighter F-22 Raptor was developed in 1986-2001 and entered service in the US Air Force in early 2003.

Air battle. With the evolution of fighters, air combat has undergone significant changes. In the first air battles, revolvers were used to destroy enemy aircraft and pilots. Such battles in the air resembled the joust tournament. Before the appearance of the parachute, the last resort

was a jump from below, which often led to death. A pilot who wins five or more in the air is called an "ace".

Revolvers soon gave way to machine guns, which they assembled at a certain point before the fighter, first on the wings, and then on the front side of the fuselage. To defeat the enemy confidently, it was necessary to enter the tail of the enemy aircraft, making maneuvers. Such combat was complex, physically demanding for pilots performing high G acrobatic manoeuvres. The pilot was not only physically well developed, but also had to know his own aircraft and enemy aircraft very well. The most important features were maximum speed, speed of ascent, maneuverability. To confirm the victory of the air, film cameras were used, which were obtained when the trigger was pressed.

In order to win an air battle in modern fighters, it was no longer necessary to see the enemy aircraft directly, it was enough to detect it using air radars and/or auxiliary ground systems. The pilot was protected by a special anti-g suit and could withstand much higher g-forces in fighter battles. Vector control engines allow the pilot to perform the most complex manoeuvres at maximum speed in the air, which is another proof that computers are impossible without an auxiliary role in the control of modern fighter aircraft.

Modern air battles are divided into three types: offensive and defensive:

- close maneuverable air battle (BVB)
- mid-range air combat (SVB)
- long-range air combat (DVB)
- Each type of air battle has its own weapon:
- For BVB-weapons and missiles with thermal heads (TGSN)
- For SVB-medium-range missiles
- For DVB-long-range missiles

In order to conduct air battles correctly, it was necessary to take a tactically comfortable position (TVP).

Note

Military aviation expert Pierre spray believes that four factors of the fighter's combat effectiveness were able to ensure his victory in air battles:

1. See the enemy first. Experts believe that 65-95% of aircraft shot down in fighter battles from World War I to Vietnam were killed in unexpected attacks.
2. Increasing the enemy in quantitative terms.
3. To have better maneuverability. It was necessary to increase not only from a technical point of view, but also from the point of view of the level of skill of pilots.
4. The ability to quickly strike at the enemy. The more aircraft participate in the battle, the higher the probability of a blow, and the higher the probability of falling into an enemy target when the pilot targets another.

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