

Прахов А.М.

*Научный руководитель: ст. преподаватель К.О. Мацкевич
Муромский институт (филиал) федерального государственного образовательного
учреждения высшего образования «Владимирский государственный университет
имени Александра Григорьевича и Николая Григорьевича Столетовых»
602264, г. Муром, Владимирская обл., ул. Орловская, 23
email: prahof.alex@yandex.ru*

The history of headphones development

At the end of the XIX century, sound recording began to take its first steps. The world eagerly and enthusiastically absorbed new musical trends and took timid steps to develop the technical component of music.

The hard work of telephone operators in the middle of the XIX century provided for constant interaction with the transmitter and receiver of sound. In 1881, the assistant of the telephone company Bella Ezra Gilliland suggests fixing the parts of the phone to a metal rod, fixing a 3-kilogram structure consisting of a microphone and a speaker on the head. This decision marked the beginning of the evolution of headphones, and the invention of Gilliland became the first telephone headset.

In 1891, French engineer Ernest Mercadier patented a set of plug-in headphones - the "great-grandfathers" of modern earbuds. The design of the headphones became revolutionary for that time – miniature button headphones with a rubber cap that protects the auricle from irritation and, at the same time, is used as noise reduction.

Another attempt to create a prototype of in-ear headphones belongs to the famous inventor Thomas Edison. In 1895, he patented a device called the "kinetophone". The patented device was able to reproduce sound and cinema at the same time. Its principle of operation was based on the transmission of sound from a phonograph through hollow tubes directly into the ear canal. It was based on a medical stethoscope and no electronics.

Throughout the history of technology development, the first industry to receive the latest inventions and "technical breakthroughs" has always been the military industry. In 1910, Nathaniel Baldwin offered the US Air Force several drawings describing the design of headsets. The first model of headphones provided for the placement of an arc over the head, and not in the neck area. A few years later, it was the model proposed by Baldwin that became the main means of communication for all operators of the Navy.

The heavy-weight design of the headphones has undergone several more changes, the headband has received a skin-tight fit and size adjustment. The improvement in the design of headphones brought Baldwin the title of "father" of all modern headphones.

In 1921, a serial model of the Western Electric radio receiver entered the US market. Included with the device, the buyer received high-resistance headphones CW-834.

In the thirties of the XX century, headphones were widely used for communication. Popular entertainment programs on the radio preferred to listen to it with headphones. At the same time, their design and technical characteristics were far from perfect. The headphones did a great job with speech, but things were really bad with music. The 18-year-old Eugen Bayer, a native of Sweden, who took on the role of an audio technology revolutionary, decided to radically change the situation.

In 1926, Bayer founded the company Elektrotechnische Fabrik Eugen Beyer. Microphones remained the company's priority product for a long time, but in 1937 Bayer decided to release headphones.

But the company that really managed to shake up the world and release headphones "for everyone" was originally engaged in TV rental. In 1958, John Koss presented a portable vinyl player at the Consumer Electronics Show. In fact, the device was a traditional turntable installed in a suitcase. Headphones were also supplied with the player, for the manufacture of which John Koss and Martin Lange used a model of standard aviation headsets. Armed with parts from an old TV, the inventors managed to transform the sound quality.

Nobody was particularly interested in the player itself, but the sound of the headphones managed to impress all the visitors present at the exhibition. Realizing that the headphones have a great future,

John Koss released the first production model Koss SP-3.

It was the Koss SP-3 model that became the prototype of modern in-ear headphones. The direction of sound in the SP-3 was carried out not into the auricle, but into the ear canal. The success of the first production model of Koss headphones made it practically a monopolist in the market. By 1967, the company's turnover exceeded \$1 million. Later, in 1983, another legendary Koss Porta Pro model entered the market.

The category of electrostatic headphones was first introduced by the Japanese company Stax in 1959. Stax headphones cannot be bought in a regular home appliance store, portable players are never equipped with them. These headphones were originally created for a narrow audience of professionals.

The use of an ultra-thin membrane placed between two electrodes and a high-voltage amplifier cause sound vibration with a minimum level of harmonic distortion and enviable sensitivity. Due to the high price, the mass market is not ready for such a model even today, although the sound of electrostatic headphones is close to the standard.

Koss later gave its answer to Stax by releasing a model of Koss ESP-6 electrostatic headphones.

In 1964, Beyerdynamic released the DT 507 plug-in earphone, which weighs only 11 grams. It was supplied complete with a branded radio receiver. A year later, the "smallest radio receiver" appeared in the USSR, a dual-band "Micro", the size of which did not exceed a matchbox.

The "Micro" was equipped with a miniature TM-2M mono earphone with several rubber nozzles and a flexible earpiece.

Up until 1968, the entire range of headphones was represented exclusively by closed-type models. Only one person could hear the music, and all the sound remained in the "shell" of the earphone. The driver closed on the back of the ear not only completely isolated the music, but also made the headphones heavy and bulky. The German company Sennheiser decided to significantly simplify the design and open the driver.

The first headphones with an open design was the Sennheiser HD 414 model.

Having received a patent for open-type headphones in the distant 60s, Sennheiser continues to receive lifetime deductions from each brand that produces this type of headphones.

Sony also managed to support the hysteria around the mass use of headphones. In 1979, the first portable Walkman player entered the market. Sony MDL-3L2 headphones became its main partner.

The use of noise reduction systems in aviation could not but affect the scope of headphones for ordinary consumers. Since 1986, Bose has become one of the largest suppliers of headphones with an active noise reduction system for pilots. The company's patented QuietComfort system, used in headphones, reached the mass market only in 2000.

The appearance of the first wireless headphones can be attributed back to the early nineties, when Koss announced a model that allows using an infrared beam to connect to an amplifier or a sound source using the included set-top box.

The idea of wireless headphones was immediately picked up by Recoton, presenting a model of headphones operating at a frequency of 900 MHz and having a range of up to 45 meters.

In 1997, Recoton received a refusal from the UK government to produce wireless headphones operating at a frequency of 900 MHz, due to the fact that this wavelength is already in use. In search of comfort and an alternative technology for abandoning wires, in 1998, manufacturers opened up new opportunities for broadcasting "sound without wires" – Bluetooth.

In 2004, the first Bluetooth i-PHONO BT420EX wireless headphones with their own transmitter entered the market. A year later, the first headphones using a wireless Wi-Fi network for sound transmission began to appear on the market.

Today, manufacturers will continue to make history by creating new extraordinary solutions to the realization of exactly how headphones should look.