Acoustical engineering harry f olson

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You read the free preview pages 693 to 695 do not appear in this preview. You read the free 703 preview pages to 706 not displayed in this preview. You read the free 714 preview pages to 728 not displayed in this preview. Go to the main content In this article lead section to be expanded. Please consider expanding the lead to provide an accessible overview of all important aspects of the article. (September 2015) Harry Ferdinand Olson (December 28, 1901 - April 1, 1982) was an outstanding engineer at RCA Victor and a pioneer in acoustic engineering of the 20th century. Harry F. Olson's biography was born in Mount Pleasant, Iowa, at the age of Swedish immigrant parents. Technically inclined from an early age, he built and flew models of airplanes, built a steam engine and invented a wood-burning boiler that led a 100-volt DC generator. Olson designed and built an amateur radio transmitter with enough knowledge to obtain an operator's license. Olson earned a bachelor's degree in electrical engineering from the University of Iowa and then went on to receive a master's degree with a thesis on acoustic wave filters in solids and a doctorate in physics, working with the polarization of high-resonance mercury radiation. Immediately After graduating in 1928, Olson moved to New Jersey to work at RCA Laboratories. Olson will remain at the RCA for nearly four decades. The RCA is a 44-series tape mic that was used by CBS. In 2005, the Mix Foundation honored Harry F. Olson and Les Anderson of RCA with induction into the TECnology Hall of Fame for their development of the Model 44 microphone in 1931. Olson continued to be interested in music, acoustics and sound playback, and by 1934 he was placed in charge of acoustic research at RCA. At RCA, Olson worked on a wide range of projects that included developing microphones for the broadcast and film industry, improving loudspeakers and making significant contributions magnetic tape recording. Like many engineers in the World War II generation, Olson also made significant contributions to military technology, particularly in the field of underwater sound and anti-submarine warfare. After the war, Olson worked with Herbert Belar to develop the first modern electronic synthesizer. Equipped with electronic tubes, the Mark II Sound synthesizer was used to compose music that was recorded and sold to the public. A prolific inventor and engineer, Olson has been awarded more than 100 patents for various types of microphones (including widely used 44-and-77-series), cardioid (directional) microphones, partition loudspeakers, air suspension speakers, isobaric speakers, early video recording equipment, audio recording equipment, phonograph pickups, underwater sound equipment, noise-cancelling, sound technology in film-pictures, and public systems. He is also the author of 135 articles and ten books, including interdisciplinary text, which outlines dynamic analogies between electrical, acoustic and mechanical systems. In 1949, Olson was honored as the first recipient of the Audio Engineering Society's John H. Potts Memorial Award, an award program that was later renamed the Gold Medal. In 1953-4 Olson served as president of the Acoustic Society of America, which awarded him the first silver medal in engineering acoustics in 1974 and a gold medal in 1981. In 1970 he received the IEEE Lamme Medal, in 1959 he was elected to the National Academy of Sciences and received many honorary degrees during his lifetime. Olson retired from RCA in 1967 while continuing to work as a consultant at RCA Laboratories. High Fidelity Demonstration Shortly after World War II, Dr. Olson conducted an experiment, now considered a classic, to determine the preferred bandwidth for music playback. Previous experimenters have found that listeners seemed to prefer a high-frequency cut-off of 5,000 Hz to play music. Dr Olson suspected that this was probably due to the imperfection of the sound, especially at higher frequencies, as reproduced by the equipment in general use at the time. These flaws included clicks and slams (from 78 rpm entries), added noise (from AM radio broadcasts static), hiss and harmonic distortions (from amplifier circuits), and non-linear frequency reactions from primitive loudspeaker designs. If the sound was free of these problems, he reasoned, listeners would prefer full-frequency playback. In his experiment, he created a room that was divided diagonally by a visually opaque but acoustically transparent screen. The screen included a hidden low-frequency acoustic filter with an upper cut-off frequency of 5000 Hz. This filter can be opened or closed, allowing either a full range of frequencies to pass or a range of just below 5000 Hz. At first a small orchestra sat and performed one side of the screen, while a group of test subjects sat on the other another Listened. Listeners were asked to choose their preferences between two conditions: full bandwidth or limited bandwidth. There was an overwhelming preference in favor of full bandwidth. The orchestra was then replaced by a sound playback system with speakers behind the screen. When the sound system was free of distortion, listeners preferred full bandwidth. But when it introduced a small amount of non-linear distortions, the subjects preferred limited bandwidth, thus clearly demonstrating the importance of high quality in audio systems. As a result of this experiment and the work of others such as Avery Fisher and then Edgar Vilshur, the high accuracy of recording, transmission and reproduction equipment saw an increase in investment, development and public recognition in the decades that followed. The design and manufacture of everything from microphones to tape recorders, vinyl records, amplifiers and loudspeakers has been affected. The personal life of the Iconic microphone image based on the design of the RCA Type 77-mic Harry F. Olson was born on Mount Pleasant, Iowa, on December 18, 1901. He was the first of two children. His parents were Swedish immigrants. Olson married Lauren Johnson of Morris, Illinois, in 1935. Both his mother and his wife were talented amateur artists - Lauren's paintings have been on display at Olson's RCA office for years. Olson died at Princeton Medical Center in Princeton, New Jersey, on April 1, 1982, at the age of 80. Awards and Honors honor of the year or Award 1940 Modern Pioneer Award of the National Manufacturers Association 1952 John H. Medal Potts Society of Audio Engineering 1955 Samuel L Medal. Warner Society of Film and Television Engineers 1956 John Scott City Medal Philadelphia 1956 Award of achievement of the IRE Professional Group at the 1963 John Ericsson Medal of the American Society of Swedish Engineers 1965 Emil Berliner Award Audio Engineering Society 1967 Institute of Electrical and Electronic Engineers Mervyn J. Kelly Medal 1969 Institute of Electrical and Electronic Engineers Consumer Electronics Award 1970 Institute of Electrical and Electronic Engineers Lamme Medal 1974 Acoustic Society of America First Silver Medal in Engineering Acoustics 1981 Acoustic Society Gold Medal of America Patents Year Patent Description Number 1931 Acoustic Device for Sound Pickup (Ellipsoid Microphone) 1,814,357 Conversion of sound vibrations into electrical variations (First Practical Mic Tape) 1,885,001 1932 System reacts to the flow of sound waves energy (Pressure And Speed Sound Level Meter) 1,892,644 Device (single-direction cardioid microphone) 1,892,645 (7) 1933 Energy Conversion and Transmission System (Capacitor Mic Step-Up Transformer with Remote Preinset.) 1,897,732 Device (Loudspeaker Horn) 1,984,542 [9] 1935 Loud Speaker and Method of Propagating Sound (Passive Radiator Loud Speaker) 1,988,250 [10] 1935 Acoustic Device (Double Voice Coil Loudspeaker) 2,007,748 [11] 1936 Electroacoustical Device (Ribbon Telephone Microphone/Speaker) 2,064,316 [12] 1937 Sound Reproducing Apparatus (Multi-Cellular Horn) 2,102,212 [13] 1937 Acoustical Device (Small Portable Closed Back Ribbon Microphone) 2,102,736 [14] 1938 Microphone 2,113,219 [15] 1938 Microphone And Circuit (Microphone Mixer By Verifying Field Coil Strength) 2,119,345 [16] 1940 Loud-Speaker (Multiple Flare Horn) 2,203,875 [17] 1940 Loud-Speaker (Hybrid Bass-Horn/Bass-Reflex Design) 2,224,919 [18] 1941 Electroacoustical Apparatus (Line Microphone Shotgun Microphone) 2,228,886 [19] 1941 Acoustical Apparatus (Woofer Surround) 2,234,007 [20] 1942 Signal Translating Apparatus (Multiple Co-Axial Loudspeaker Designs) 2,269,284 [21] 1942 Electroacoustical Apparatus (Design of the RCA 77 Ribbon Microphone) 2,271,988 [22] 1942 Radio Remote Control System (Using Different Frequencies of Sound) 2,293,166 [23] 1942 Electroacoustical Apparatus (Line Array Microphone) 2,299,342 [24] 1945 Signal Translating Apparatus (Sub-Aqueous Submarine Microphone) 2,390,847 [25] 1947 Magnetostrictive Signal Translating Apparatus (Rugged Sub-Aqueous Submarine Microphone) 2,414,699 [26] 1947 Signal Translating Apparatus (Sub-Aqueous Submarine Pressure Compensated Speaker) 2,429,104 [27] 1949 Signal Transmission and Receiving Apparatus (Ultrasonically Power Wireless Earphone) 2,461,344 [28] 1949 Air Suspension Loudspeaker 2,490,466 [29] 1950 Synthetic Reverberation System 2,493,638 [30] 1950 Diffraction Type Sound Absorber (Suspended) 2,502,016 [31] 1950 Diffraction Type Sound Absorber Covered By A Membrane 2,502,018 [32] 1950 Diffraction Type Sound Absorber With Complementary Fitting Portions 2,502,019 [33] 1950 Diffraction Type Sound Absorber With Fiberglass Walls (Cylinder) 2,502,019 [33] 1950 Single Element, Unidirectional, Dynamic Microphone (With Pattern Control) 2,512,467 [34] 1950 Feedback Controller System For Recording Cutters And the Like (Phonograph Recording Lathe) 2,516,338 [35] 1951 Directional Microphone (Coincident Pair Of Ribbon Microphones With Horizontal Pattern Control) 2,539,671 [36] 1951 Coaxial Dual-Unit Electrodynamic Loud-Speaker (Improved Version) 2,539,672 [37] 1951 Transformerless Audio Output System (Tube Amplifier) 2,548,235 [38] 1951 Means For Improving The Sensitivity And The Response Characteristics Of Velocity Microphones 2.566,039 [39] 1951 Line Type Pressure Responsive Микрофон 2566,094 (Акустический высокочастотный эквалайзер 2,572,376 (41) 1953 Система подвески для динамических микрофонов 2,628,289) 2,629,000 (43) 1953 Второй орден Градиент Направленный микрофон 2,640,110 (44) 1953 Портативный радио с бас-рефлекс кабинета 2,642,948 (45) 1953 Шум дискриминации 2,645,648 (46) 1953 Cabinet for Sound Translation Apparatus 2,649,164 (47) 1953 Multi-section acoustic filter (filtering frequencies above 5000 Hz) 2,656,0044 Single-axis microphone 2 680 787 (49) 1954 Noise Reduction System 2,686,296 (50) 1954 Sound Translation (second speaker inside the cabinet) 2,688,373 (51) 1954 Coaxial, Double Unit, Electrodynamic Loudspeaker (Improved Magnetic Structure) 2,699,472 (52) 1955 Microphone Speed (Improved Magnetic Structure) 2,699,474 (53) 1955 Dynamic Mic (Compact Design) 2,718,272 (54) 1956 Single-directional microphone (Low Cost Tape Design) 2,751,441 (55) 1956 Acoustic Resistance for pressure type 2,773,130 (56) 1957 Methods of restoring phonographic records (re-synthesizing recording) 2,808,466 (57) 1957 Transducer with fluid filled aperture Suspension 2,814,353 Loudspeaker Design (Sculpture cone for high-frequency model control) 2,825,823 (59) 1958 chassis Combination and loudspeaker 2,838,607 (60) 1958 Directional microphone (using two microphones to increase directness) 2,854,511 , Threshold Type 2,645,684 (62) 1958 Musical synthesizer (Electronic) 2.2.2855,816 (63) 1958 Wide Range Dynamic Phonograph Pickup 2,858,37559 Acoustic Device (Improved Acoustic Maze) 2 870 856 (65) 1959 Detector Change Signal frequency 2,918,667 (66) 1960 Vibration Control device 2,964,272961 Speech analysis and printer control mechanisms 2.2.2.2971,057 (68) 1961 Electronic Sound Absorber 2,983,790 (69) 1961 Directed Electrostatic Microphone 3 ,007,012 1961 Music Writing Machine 3,007,362 (71) 1963 Stereophonic loudspeaker 3,104,3729 (72) 1968 Voiced Sound Fundamental Frequency Detector 3,400,215 73 Links - b c d Harry F. Olson Biographical Memoirs by Cyril M. Harris - Mix Foundation. TEC Awards. TECnology Hall of Fame, 2005. Innovations that changed the Pro Audio World. Archive from the original 2008-10-17. Received 2008-09-29. IEEE Lamme Medal recipients. Ieee. Received on December 12, 2010. Permanent Dead Link - U.S. Patent 1814357 - U.S. Patent 1885001 - U.S. Patent 1892644 - U.S. Patent 1892645 U.S. Patent 1988250 - U.S. Patent 2007748 - U.S. Patent 2064316 - U.S. Patent 2102212 - U.S. Patent 2102736 - U.S. Patent 2119345 - U.S. Patent 2203875 - U.S. Patent 2103875 - U.S. Patent 2113219 - U.S. Patent 2119345 - U.S. Patent 2203875 - U.S. Patent 2113219 2224919 - U.S. Patent 2228886 - U.S. Patent 2234007 - U.S. Patent 2269284 - U.S. Patent 227198 U.S. Patent 2293166 - U.S. Patent 2299342 - U.S. Patent 2390847 - U.S. Patent 2414699 - U.S. Patent 24291044 - U.S. Patent 2490466 - U.S. Patent 2493638 - U.S. Patent 2502016 - U.S. Patent 2502018 - b U.S. Patent 2502019 - U.S. Patent 2512467 - U.S. Patent 2516338 - U.S. Patent 2539671 235 - U.S. Patent 2. 566039 - U.S. Patent 2566094 - U.S. Patent 2572376 - U.S. Patent 2628289 - U.S. Patent 2629000 - U.S. Patent 2640110 - U.S. Patent 2642948 Patent 2656004 - U.S. Patent 2680787 - U.S. Patent 2686296 - U.S. Patent 2688373 - U.S. Patent 2699472 U.S. Patent 2751441 - U.S. Patent 2773130 - U.S. Patent 2808466 - U.S. Patent 2814353 - U.S. Patent 2825823 - U.S. Patent 28386074511 - U.S. Patent 2645684 - U.S. Patent 2855816 - U.S. Patent 2858375 - U.S. Patent 2870856 - U.S. Patent 29642772 2971057 - U.S. Patent 2983790 - U.S. Patent 3007012 - U.S. Patent 3007362 - U.S. Patent 3400215 External References Olson Biography National Academy of Sciences. Harry F. Olson, 1901-1982: Kirill M. Harris's biographical memoir Harry F. Olson's discography on Discogs extracted from acoustical engineering harry f olson pdf