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Radio Power Units

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Manufactured by FANSTEEL PRODUCTS COMPANY, Inc., North Chicago, Illinois

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First work on electrolytic rectifiers were made by Reginald Fessenden and Lee de Forest aiming the realization of radio detectors.

First tube radios use zinc carbon batteries but for big radios lead rechargeable batteries were used.

The physical and chemical Clarence William Balke was the director of research of the Fansteel Metallurgical Corp. and is author of several works related with electrolytic rectifiers and electrolytic capacitors. One of the patents is US 1,710,806.

Electrolytic rectifiers work based on the principle that AC current between two different electrodes immersed in an acid solution flows preferably in one direction.

Usually electrodes are: tantalum and lead; and electrolyte is sulfurous acid. Aluminum electrode may be used and this was the base for the development of the electrolytic capacitor by Balke.

The electrolytic rectifier operates on the principle that an aluminum electrode in an electrolyte will only conduct when it is negatively charged. When it is positively charged, it quickly forms an insulating layer of aluminum oxide which prevents further current flow. When it is negatively charged, it forms hydrogen at the surface of the electrode, which disturbs the oxide layer enough to allow current to flow.

Edgar W. Eagle, working for the chemical company Fansteel Products Company, Inc., of North Chicago, Illinois, USA, filed a patent on 7th of January of 1927 (U.S. patent nr. 1680210), introducing some improvements in electrolyte rectifier.



Balkite Trickle Charger (Moisés Piedade Collection)



Electrolytic rectifier RS86, Balkite from Fansteel Prod. Co Inc, EUA. (Moisés Piedade Collection)