

M<sup>c</sup> Candless Sales of Audions.

Information from files of Sheffield & Bett, attorneys for RCA, in RCA vs. E.J. Edwards Co on Langmuir Patent #1,282,439 (Grid Leak Patent).

"Investigator <sup>5-27</sup> ~~6-42~~" reports on ~~March~~ April 8, 1926 on interviews with Mr. Grogan, Superintendent of Westinghouse Factory at 35 Steuben St., Brooklyn, N.Y. and Mr. H.W. M<sup>c</sup> Candless at Westinghouse Office at 150 Broadway.

Grogan stated that M<sup>c</sup> Candless made audions for Dr. Lee de Forest in 1905 and 1906 and also stated that it was not until 1912 that M<sup>c</sup> Candless did any business with Wallace.

Saw M<sup>c</sup> Candless, explained nature of visit, and he brought out a large stack of old manufacturing records of his company, together with some sales records. M<sup>c</sup> Candless went over these records and stated that he made his first tube in 1905 for Dr. Lee de Forest, who had come to him with a Fleming Valve.

While the records show that M<sup>c</sup> Candless made tubes for de Forest, there is nothing in the records to show that they were of the tubular type. M<sup>c</sup> Candless feels certain, however, that he made a tubular ~~andion~~ bulb for de Forest and this fact is substantiated by a circular printed by de Forest in 1906, which clearly shows a tubular Audion. All transactions at this time were with Dr. de Forest or his assistant, Mr. C.D. Babcock.

The only record that M<sup>c</sup> Candless was able to locate today that specified that tubular bulbs had been provided was as follows:-

July 9, 1907 - for Dr. de Forest Tubular bulbs 1 1/4" diameter.

M<sup>c</sup> Candless requests more time to go over records and discuss with Grogan.

Investigator (Agent 6-42) reports, March 15, 1927, on interview with M<sup>c</sup> Candless as follows:-



## M<sup>c</sup> Candless Sales of Audions (cont.)

All tubes sold to Gernsback were round bulb with candelabra base.

Dr. Goldhorn, on March 6, 1912, purchased a supply of tubes with double grids and plates.

On October ~~18~~ 5, 1912 M<sup>c</sup> Candless sent a shipment of tubes to North American Company in New York, but has no information as to type sent.

M<sup>c</sup> Candless has large list of tubes sold to Wallace, e.g.

|                |                |
|----------------|----------------|
| Feb 13, 1912   | 12 round tubes |
| March 8, 1912  | 1 " tube       |
| March 19, 1912 | 1 long type    |
| March 23, 1912 | 7 long type.   |



October 12, 1944.

## Wallace Valve Detector and Valve Receiver

Information below comes largely from files of Sheffield & Betts, attorneys for R.C.A. in the case of RCA et al. vs. E. J. Edmond & Co. on <sup>Longmuir</sup> Patent #1,282,439 (Grid Leak Patent).

### General

Wallace <sup>Valve</sup> ~~Detector~~ Detectors and Wallace Valve Receiving sets were made, advertised and sold by Wallace & Co., 59 5<sup>th</sup> Ave, New York City in the period 1911-1913. Wallace & Co. consisted of two men, Paul E. Wallace and Merritt D. Mosher. (See photostat of "Certificate of Doing Business" attached)

### Paul E. Wallace

Wallace lived in Rochester, N.Y. at 46 Hortense St. prior to 1910, and at West Henrietta, N.Y. near Rochester, from April 1910 to April 1911. He was engaged in automobile service work in West Henrietta and Rochester, but had no garage or place of business.

He was an amateur radio enthusiast, and used an audion in the standard way in Rochester and West Henrietta early in 1910.

On a trip to New York in January 1910 he visited the de Forest station in the Metropolitan Tower, and also met O.T. Louis of the O.T. Louis Company at 59 5<sup>th</sup> Ave. He moved to New York in February 1911, leaving his family up-state. He lived at the Hotel St. George in New York. (who was born in Sioux City, Iowa)

Merritt D. Mosher came to New York in May 1911, and lived at the Hotel St. George, rooming with Wallace, until 1912 when Wallace moved to a place on 12<sup>th</sup> St between 5<sup>th</sup> and 7<sup>th</sup> Avenues. Meantime Wallace moved his family to 212 Union Ave., Long Branch, N.J. about March 1911, where they lived until the fall of 1912. Wallace still stayed in New York, but visited his family week-ends and during the summer. Later, he and his family moved to Great Kills, Staten Island where he lived until January 1, 1914.

In 1914-1915 he lived on 61<sup>st</sup> St in Brooklyn.



Wallace Valve Detector and Wallace Valve Receiver (cont.)

From July 1, 1915 until June 1916 Wallace was radio operator on the U.S. Fisheries ship "Roosevelt"

From June 1916 until February 1917 he was radio officer on the U.S.S. "Kanawha", in naval service.

Beginning February 1917 and for some time thereafter he was on furlough from naval service.

He was in Juneau, Alaska <sup>summer of</sup> prior to 1919, was selling tools for Harbanks & Co in summer of 1919, and worked in Detroit in December 1919.

Wallace worked for the International Radio Telegraph Co. at Bush Terminal from February or March of 1920 ~~to~~ until November 1920. During this <sup>and for some time previously</sup> period, he lived in Palisades Park, N.Y. first at #60 Edsall Blvd, and later at 56 Edsall Place. This latter residence was destroyed by fire, <sup>in April 1920</sup> in which he lost all his records, papers, advertising matter, etc. After the fire he moved, on April 24, 1920 to 507 West 123<sup>rd</sup> St. New York City.

~~Begin~~ From November 29, 1920 to March 15, 1922 he worked for Westinghouse Elec. & Mfg. Co. on the maintenance and repair of machinery and apparatus, including radio ~~ap~~ apparatus. In this work he reported to Mr. L.D. Canfield at 467 10<sup>th</sup> Ave., New York City. <sup>He was released when he was found to be surreptitiously abstracting electrical supplies.</sup> Insert —————>

From early (March?) 1922 to July 1922 he lived at Charleston, W. Va. From July 1922 to September 1923 he lived at Cape May, N.J. He had intended to design radio apparatus for Rosenblatt and Silverstein, but they "jumped" a contract with him and while at Cape May was virtually without employment.

In May and June of 1923 Wallace devoted most of his time to trying to locate and interview men who might have been familiar with his early radio sets. He was employed by S.E. Darby for this purpose.

He went to California in September 1923 and lived at 1241 Eddy St., San Francisco, for about 6 months.

February to July 1924 he did service work for the Federal Telephone and Telegraph Company in Arizona, California, Oregon, and Washington, being employed by the San Francisco office of the Company, 693 Mission St.



→ He testified for Armstrong in the Armstrong-de Forest interference, <sup>(see affidavit attached),</sup> after which a position was obtained for him with Westinghouse.



Wallace Valve Detector and Wallace Valve Receiver (cont).

From July 1924 to October 1924 he worked at the Federal Laboratory in Buffalo, N.Y. under the direction of M.J. Corwin, the Pacific Coast Representative of the Federal Company.

He returned to Los Angeles in October 1924 where he lived at 1184 West 37<sup>th</sup> St., where he was engaged in confidential business, the nature of which he would not disclose except to say that in May of 1925 he was in Philadelphia doing work for C.D. Ehret and Mr. Deter, Atwater-Kent general counsel. This work was similar to that done for Darby in May and June of 1923.

Wallace & Co

Wallace began doing business at 59 5<sup>th</sup> Ave (corner 14<sup>th</sup> St?) in February 1911. He rented space from O.T. Louis & Company, paying a percentage of the profits as rent. The business was at first known as "O.T. Louis Wireless Department". Mosher worked for him beginning in the summer of 1911. They handled mostly Murdock and Clapp-Eastham parts.

In January 1912, Mosher became a partner (see certificate attached) and they began doing business as Wallace & Co. Mosher left in July 1912. (Mosher worked for Western Specialty Apparatus Co. in Boston from Nov. 17, 1917 to Aug. 18, 1919<sup>1/2</sup> and lived at 820 Massachusetts Ave., Cambridge, Mass.) Wallace & Co. were in business until November or December of 1913. Space was rented from Mr. Louis until he moved his business in February 1913, when Wallace & Co. rented from Holson Bros. paying a nominal rent.

Wallace Valve Apparatus

The first audion apparatus made and sold by Wallace was a complete receiving set, sold on a mail order to some one in Atlanta or Augusta, Georgia in the summer of 1911.

The Wallace Valve Detector was first made and put on the market around July or August 1911. It was the first radio apparatus made and sold in the regular course of business at 59 5<sup>th</sup> Ave. Earlier sets were made with the "regular round audion" but later a tubular audion was used.

at 820 Massachusetts Ave., Cambridge, Mass.)



## Wallace Value Detector and Wallace Value Receiver (cont.)

Wallace advertised in "Modern Electric", "Electrician and Mechanic" and "Wireless News". Photostat copies of some of these advertisements are attached, as well as photostat copy of an advertising bulletin of Wallace & Co, and photographs of a Wallace Value Receiving set. The bulletin was first issued in the summer of 1911, the one photostated having been issued in 1912.

The Wallace Value Detector illustrated in the bulletin was first made early in 1912 and the one shown in the November 1912 advertisement a little (about a month) earlier.

The illustration of the Value Receiver in the bulletin and that in the advertisement in Modern Electric for May 1913 were made from the same cut:

(Note by G.F.J.T. - The advertisement of the Radio Telephone Co, 1391 Sedgwick Ave, New York City on page 867 of the November 1913, Vol. 6, No. 8, "Modern Electric", offering the RJ4 Detector uses the same cut as the Wallace advertisement of November 1912 noted above.

Advertisement in February 1914, Vol. 28, No. 2, "Modern Electric and Mechanics" page 242 shows the RJ4 Detector also with tubular Audion.)

The letter from which an extract is given in the May 1913 advertisement was written by Thomas A. Mc Larney, an operator stationed at Colon, Panama, to Mr. <sup>Austin F.</sup> Parkhurst of the United Fruit Co. around Dec. 1912 or January 1913. Mc Larney worked a schedule with the United Fruit ships coming into Colon.

← (Note by G.F.J.T. - Major E. H. Armstrong has characterized Wallace as the "original tube bootlegger")

### Wallace Valves

Wallace obtained all his audions from <sup>H.W.</sup> Mc Caudless & Co. Mc Caudless says that it was about January 1912 that he made the first tubular audions for Wallace. Mosher believes that all these "valves" had double filaments →

A list of audions sold to Wallace by Mc Caudless at various times is attached, taken from Mc Caudless records. No records <sup>are</sup> available for 1911,



## Wallace Valve Detector and Wallace Valve Receiver (cont.)

since all sales were on a cash basis in that year.

Note by GFJT - It will be observed that the audion bulb shown in the photographs of the Wallace Valve Receiver, has a label marked "Ultraudion" which would seem to indicate that it is not the original bulb. The word "ultraudion" was coined by de Forest to describe one variation of the audion oscillator circuit, some time after the oscillating features were discovered in 1912. Bulbs bearing this label probably were not sold before late 1913 or early 1914 at best.

Attached - Photostat of "Certificate of Doing Business"

Photostat of Wallace Affidavit in Armstrong (Westinghouse) vs. de Forest in U.S. District Court, Southern District of New York, in Equity '17/88, dated June 12, 1923.

Photostats of advertisements

Photostat of Wallace Advertising Bulletin

Photographs (4) of Wallace Valve Receiver.



## McCandless Sales of Audions to Wallace

Information from H.W. McCandless in Westinghouse office on Sat. Feb 27, 1926.

1911 - No record. All sales on cash basis.

|             |                            |              |
|-------------|----------------------------|--------------|
| <u>1912</u> | February 13 <sup>th</sup>  | 12 bulbs     |
|             | March 8 <sup>th</sup>      | 1 long bulb  |
|             | March 23 <sup>rd</sup>     | 7 long bulbs |
|             | May 15 <sup>th</sup>       | 6 bulbs      |
|             | June 3 <sup>rd</sup>       | 2 "          |
|             | June 18 <sup>th</sup>      | 12 "         |
|             | June 26 <sup>th</sup>      | 1 "          |
|             | September 23 <sup>rd</sup> | 10 "         |
|             | October 3 <sup>rd</sup>    | 14 "         |
|             | October 22 <sup>nd</sup>   | 8 "          |
|             | December 9 <sup>th</sup>   | 6 "          |
|             | December 31 <sup>st</sup>  | 28 "         |
|             | December 31 <sup>st</sup>  | <u>1 "</u>   |
|             | Total                      | 108 bulbs.   |

Total for 1912-1913 = 108 + 172 = 280 bulbs

Note by G.F.I.T. Peak of sales occurs in winter of 1912-1913, at a time when the "Radio Telephone Co" - legitimate sales agent for Audions - was moribund.

|             |                            |             |
|-------------|----------------------------|-------------|
| <u>1913</u> | January 18 <sup>th</sup>   | 17 bulbs    |
|             | January 27 <sup>th</sup>   | 14 "        |
|             | January 31 <sup>st</sup>   | 1 "         |
|             | February 5 <sup>th</sup>   | 8 "         |
|             | February 17 <sup>th</sup>  | 8 "         |
|             | February 26 <sup>th</sup>  | 8 "         |
|             | March 1 <sup>st</sup>      | 15 "        |
|             | March 11 <sup>th</sup>     | 11 "        |
|             | April 16 <sup>th</sup>     | 6 "         |
|             | April 19 <sup>th</sup>     | 6 "         |
|             | April 21 <sup>st</sup>     | 4 "         |
|             | April 26 <sup>th</sup>     | 4 "         |
|             | April 26 <sup>th</sup>     | 10 "        |
|             | May 10 <sup>th</sup>       | 10 "        |
|             | July 8 <sup>th</sup>       | 9 "         |
|             | August 18 <sup>th</sup>    | 8 "         |
|             | August 28 <sup>th</sup>    | 1 "         |
|             | August 28 <sup>th</sup>    | 1 "         |
|             | September 5 <sup>th</sup>  | 8 "         |
|             | September 19 <sup>th</sup> | 9 "         |
|             | October 2                  | <u>14 "</u> |
|             | Total                      | 172 "       |



State of New York,  
County of New York

On this *thirtieth* day of *January*  
*Nineteen Hundred and twelve*, before me personally came *Paul E. Wallace*  
and *Merritt D. Mosher*

to me known, and known to me to be the individual *s* described in and who executed the  
foregoing certificate and *they severally* acknowledged to me that *They*  
executed the same.

*Charles Ress*  
Commissioner of Deeds #75  
New York City

*Attest*  
Certificate

of

*Paul E. Wallace*

and

*Merritt D. Mosher*

Conducting Business Under the  
Name of

*Wallace & Co.*

Pursuant to Penal Code

§ 363 B. ; L. 1900, C. 216.

FILED

FEB 2 1912

CLERK'S OFFICE



State of New York, } ss.  
County of New York

Paul E. Wallace and  
Merritt D. Mosher of  
the City, County and State  
of New York

Do Hereby Certify, That They are

\*conducting or transacting the business of buying, selling and  
installing electrical apparatus

at 59 Fifth Avenue, New York

in the County of New York and State of New York,

under the name of Wallace & Co.

and that the true or real full names of the persons conducting or transacting such  
business with the post-office address of said persons as follows:

NAMES.

POST OFFICE ADDRESS.

|                    |                                      |
|--------------------|--------------------------------------|
| Paul E. Wallace    | 49 E. 12 <sup>th</sup> St., New York |
| Merritt D. Mosher. | 49 E. 12 <sup>th</sup> St. New York  |

Dated, January 30 1902



DATA ON AUDION SALES BY McCANDLESS - BREAKDOWN OF SALES TO VARIOUS PURCHASERS

| Month and Year | Customer | de Forest and de Forest Companies | Federal Telegraph Company | Marconi Wt Co. of America | Wolfe and Company | J.H. Burrell and Company | Marshall Elec Supply Company | F.B. Chambers Company | J.E. Arnold | Doctor Goldhorn | Doctor Walter G. Hudson | I.W. Henry | Aylsworth Agencies, Inc. | Western Electric Company | Electro Importing Company | Hammond and Harwood Laboratories | Miscellaneous | Cash | Total |
|----------------|----------|-----------------------------------|---------------------------|---------------------------|-------------------|--------------------------|------------------------------|-----------------------|-------------|-----------------|-------------------------|------------|--------------------------|--------------------------|---------------------------|----------------------------------|---------------|------|-------|
| <b>1909</b>    |          |                                   |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      |       |
| January        |          | 75                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 75    |
| February       |          | 101                               |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 101   |
| March          |          | 84                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 84    |
| April          |          | 27                                |                           | 1                         |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 28    |
| May            |          | 16                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 16    |
| June           |          | 12                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               | 1    | 13    |
| July           |          | 29                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 29    |
| August         |          | 38                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 38    |
| September      |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 0     |
| October        |          | 34                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 34    |
| November       |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 0     |
| December       |          | 24                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 24    |
| Total          |          | 440                               |                           | 1                         |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               | 1    | 442   |
| <b>1910</b>    |          |                                   |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      |       |
| January        |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 0     |
| February       |          | 28                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 28    |
| March          |          | 40                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 40    |
| April          |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 0     |
| May            |          | 36                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 36    |
| June           |          | 42                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 42    |
| July           |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 0     |
| August         |          | 22                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 22    |
| September      |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 0     |
| October        |          | 22                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 22    |
| November       |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 0     |
| December       |          | 24                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 24    |
| Total          |          | 214                               |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      | 214   |
| <b>1911</b>    |          |                                   |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      |       |
| January        |          | 6                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               | 1    | 7     |
| February       |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               | 5    | 0     |
| March          |          | 20                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               | 3    | 25    |
| April          |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               | 3    | 3     |
| May            |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               | 2    | 2     |
| June           |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  | *27           | 5    | 32    |
| July           |          | 12                                |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          | 1                         |                                  | 4             | 1    | 18    |
| August         |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          | 35                        |                                  | 2             | 4    | 41    |
| September      |          | 2                                 |                           |                           |                   |                          | 1                            |                       |             |                 |                         |            |                          |                          | 24                        |                                  | 6             | 6    | 39    |
| October        |          | 3                                 |                           |                           |                   |                          | 3                            |                       |             |                 |                         |            |                          |                          | 25                        |                                  | 2             | 8    | 41    |
| November       |          | 2                                 |                           |                           |                   |                          | 2                            |                       |             |                 |                         |            |                          |                          |                           |                                  | 16            | 22   | 22    |
| December       |          | 0                                 |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          | 8                         |                                  | 1             | 32   | 41    |
| Total          |          | 45                                |                           |                           |                   |                          | 6                            |                       |             |                 |                         |            |                          |                          | 93                        |                                  | 42            | 85   | 271   |
| <b>1912</b>    |          |                                   |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      |       |
| January        |          | 12                                |                           |                           |                   | 1                        |                              |                       | 4           |                 |                         |            |                          |                          | 23                        |                                  | 5             | 28   | 73    |
| February       |          | 37                                |                           | 2                         | 12                | 3                        |                              |                       |             |                 |                         |            |                          |                          | 29                        |                                  | 7             | 14   | 104   |
| March          |          | 0                                 |                           | 70                        | 8                 | 21                       | 2                            |                       |             | 7               |                         |            | 6                        |                          |                           |                                  | 1             | 20   | 135   |
| April          |          | 0                                 |                           | 1                         |                   | 12                       | 1                            |                       |             |                 |                         | 12         |                          |                          | 25                        |                                  | 2             | 12   | 65    |
| May            |          | 0                                 | 24                        |                           | 6                 | 12                       |                              |                       |             | 3               |                         |            |                          |                          | 11                        |                                  | 2             | 20   | 76    |
| June           |          | 0                                 |                           |                           | 15                | 4                        |                              |                       |             |                 |                         |            |                          |                          | 14                        |                                  | 3             | 9    | 45    |
| July           |          | 0                                 | 3                         |                           |                   | 12                       | 1                            |                       |             |                 |                         |            | 6                        |                          |                           |                                  | 4             | 7    | 33    |
| August         |          | 0                                 | 4                         |                           |                   |                          |                              |                       |             | 1               |                         | 12         |                          |                          |                           |                                  | 2             | 9    | 28    |
| September      |          | 0                                 |                           |                           | 10                | 18                       |                              |                       | 5           |                 |                         |            | 6                        |                          | 25                        | 7                                |               | 6    | 77    |
| October        |          | 4                                 |                           |                           | 22                | 6                        |                              |                       |             | 2               |                         |            |                          |                          |                           |                                  |               | 9    | 43    |
| November       |          | 6                                 |                           |                           |                   | 12                       |                              |                       |             | 1               | 6                       |            | 6                        |                          | 28                        |                                  | 2             | 7    | 70    |
| December       |          | 0                                 |                           |                           | 35                | 4                        |                              |                       |             | 3               |                         | 40         |                          | 20                       |                           |                                  | 1             | 4    | 107   |
| Total          |          | 59                                | 31                        | 73                        | 108               | 105                      | 4                            |                       | 9           | 17              | 8                       | 64         | 24                       | 20                       | 155                       | 7                                | 29            | 145  | 856   |
| <b>1913</b>    |          |                                   |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  |               |      |       |
| January        |          | 0                                 | 6                         |                           | 32                | 26                       |                              |                       |             |                 |                         |            |                          |                          | 36                        | 6                                | 9             | 9    | 126   |
| February       |          | 6                                 |                           |                           | 24                | 29                       |                              |                       |             |                 |                         |            | 6                        | 20                       |                           |                                  | 8             | 7    | 100   |
| March          |          | 12                                |                           |                           | 26                | 44                       |                              |                       |             |                 |                         |            |                          |                          | 45                        | 5                                | 2             | 8    | 142   |
| April          |          | 0                                 | 24                        |                           | 30                | 34                       |                              |                       | 26          |                 |                         |            | 2                        |                          | 50                        |                                  | 4             | 6    | 178   |
| May            |          | 0                                 |                           |                           | 10                | 31                       |                              |                       | 10          |                 |                         |            | 2                        | 20                       | 50                        | 10                               |               | 4    | 137   |
| June           |          | 0                                 |                           |                           |                   |                          |                              | 12                    | 8           | 3               | 1                       |            | 3                        | 6                        |                           |                                  |               | 5    | 38    |
| July           |          | 6                                 | 12                        |                           | 9                 | 8                        |                              |                       | 12          | 2               | 2                       |            |                          |                          |                           |                                  |               | 3    | 65    |
| August         |          | 0                                 |                           |                           | 10                | 18                       |                              |                       | 12          | 1               |                         |            | 5                        |                          | 6                         | 6                                | **59          | 12   | 153   |
| September      |          | 33                                |                           |                           | 17                | 64                       |                              | 12                    | 9           |                 |                         |            |                          |                          | 12                        |                                  | 19            | 17   | 163   |
| October        |          | 20                                |                           |                           | 14                | 25                       |                              | 12                    | 25          |                 |                         |            | 2                        |                          | 10                        |                                  | 5             | 4    | 117   |
| November       |          | 105                               |                           |                           |                   |                          |                              |                       | 7           |                 |                         |            |                          |                          |                           |                                  | 4             |      | 109   |
| December       |          | 360                               |                           |                           |                   |                          |                              |                       |             |                 |                         |            |                          |                          |                           |                                  | 1             |      | 368   |
| Total          |          | 542                               | 42                        |                           | 172               | 279                      |                              | 60                    | 109         | 6               | 3                       |            | 20                       | 46                       | 211                       | 27                               | 122           | 77   | 1716  |

NOTES \* - 25 of these sold to Charles de Grave Sells

\*\* - 50 of these sold to Wireless Specialty Apparatus Company



Ex #11  
J.H.  
5/11/12

WIRELESS TELEGRAPH

SPECIALTIES



**WALLACE & CO.**

59 FIFTH AVENUE  
NEW YORK

Terms—strictly net, cash with order.  
We have no agents nor discounts.



## COMMERCIAL TYPE PHONES.



The unequalled success of our receiving sets is due in no small measure to the superiority of our phones. They are not rated at a fixed resistance, but are wound so as to contain the proper number of ampere turns in the right place.

Great care is taken in the adjustment of these phones, so as to have the diaphragms the proper distance from the pole pieces, thus producing the right tone or pitch.

The resistance of these phones is about 2200 ohms to the set.

*Price, with hard rubber covered head band and 6 foot cord, \$8.50.*

## AMATEUR PHONES.

We also have a lower priced phone, which for the money, is the leader of all others. These phones have time and again shown themselves superior to phones of other well known makes which sell for from \$3 to \$4 more.

Wound to 2000 ohms per set, and equipped with nickel plated adjustable head band and five foot cord. *Price, \$5.00.*

---

The claims we make for our apparatus are based on the results of actual use by ourselves and the purchasers and users of our goods, and we are ready to substantiate any such claims.



## WALLACE VALVE DETECTOR



This detector is not only the most sensitive receptive device used in wireless work, but has the additional advantage of being absolutely permanent in adjustment. In fact, with the exception of the rheostat used to regulate the filament voltage, it requires no adjustment whatever.

No amount of tipping or jarring, such as is encountered on shipboard, can affect it in any way, and it can not be "knocked out" by a heavy transmitting spark as are detectors of the mineral or electrolytic type.

Much more selective tuning may be done with receiving sets employing this device than with those using the ordinary detector.

Everything pertaining to the detector, except the 4 volt 40 ampere hour storage battery which we furnish with it, is mounted in and upon the mahogany cabinet as shown in the cut.

The lamp is provided with two filaments, so that it is not necessary to renew the lamp until both are burnt out. With

careful handling each filament should last at least three months with constant use. We do not, however, guarantee these filaments against carelessness or abuse. They are tested and known to be in perfect order before shipment.

The two point switch at the left of the lamp is used to throw on either of the two filaments, and should always be off when sending.

The binding posts under the rheostat are connected to the storage battery, and are marked so that the positive and negative connections may be properly made.

The receivers are connected to the binding posts at the right of the lamp (marked "rec").

The posts on the back of the box (marked "tuner") are connected to the secondary terminals of the tuning device, across which a variable condenser of moderate capacity should be shunted to get the best tuning.

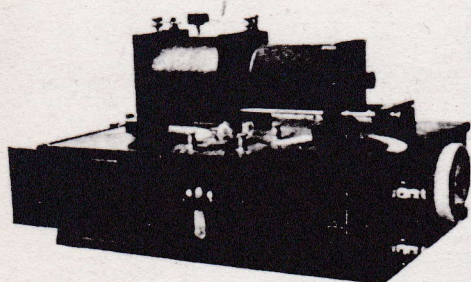
*Price, as shown, together with 4 volt 40 ampere hour storage battery \$20.00.*

Bulbs are not sold separately except for renewals, and then only upon return of old bulbs.

*Renewal Bulbs \$3.00.*



### VALVE RECEIVING SET.



While our valve detector will increase the efficiency of any receiving set from 25 to 50 per cent, it is impossible to get the best results in long distance receiving and selective tuning unless all the component parts of such a set are so built, proportioned and assembled that they bear the proper relation one to another.

In this set all these details have been carefully worked out so as to secure maximum efficiency together with simplicity and ease of operation.

Continued service in actual commercial work, both on shipboard and in land stations, has proven the superiority of these sets to any on the market.

These sets will tune in stations having wave lengths up to 3000 meters if used in connection with a reasonably large antenna.

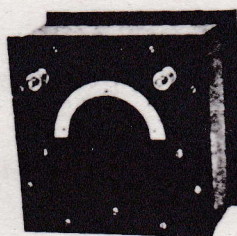
*Price, with 4 volt 40 ampere hour*

*storage battery and our commercial type phones, \$65.00.*

*If ordered without phones deduct \$8.50, or if without storage battery deduct \$5.00.*

*Can not be sent by mail.*

### VARIABLE CONDENSER.



This is the condenser that we use in our receiving sets, and has a range of capacity which will cover all requirements in tuning. It is much more efficient than smaller condensers of equal capacity which have thin, delicate plates spaced closer.

No receiving set will tune as sharply or bring in the signals as well unless equipped with variable condensers.

The capacities of this condenser range from about .00003 M. F. to about 001. M. F.  
*Price, \$7.50.*



MCCANDLESS SALES OF AUDIONS TO FEDERAL TELEGRAPH CO. AND DE FOREST.

Information from H. W. McCandless at Westinghouse Office (150 Broadway)  
Saturday, February 27, 1926.

1911 No records. Only cash sales.

|             |             |                                        |          |
|-------------|-------------|----------------------------------------|----------|
| <u>1912</u> | January 12  | Order by de Forest for Federal Tel Co. | 12 bulbs |
|             | May 13      | Federal Tel Co.                        | 24 bulbs |
|             | July 18     | Federal Tel Co                         | 3 bulbs  |
|             | August 29   | Federal Tel Co.                        | 4 bulbs  |
|             | October 10  | de Forest                              | 2 bulbs  |
|             | October 10  | de Forest                              | 2 bulbs  |
|             | November 21 | de Forest                              | 6 bulbs  |

|             |           |                 |          |
|-------------|-----------|-----------------|----------|
| <u>1913</u> | January 9 | Federal Tel Co. | 6 bulbs  |
|             | April 3   | Federal Tel Co. | 24 bulbs |
|             | July 1    | Federal Tel Co. | 22 bulbs |



File-McCandless  
de Forest  
Wallace Valve

McCANDLESS SALES OF AUDIONS.

Information from files of Sheffield & Betts, attorneys for RCA, in RCA vs. E. J. Edmonds & Co., on Langmuir Patent #1,282,439 (Grid Leak Pat.)

Investigator "5-27" reports on April 8, 1926 on interview with Mr. Grogan, Superintendent of Westinghouse Factory at 35 Steubed Street, Brooklyn and Mr. H. W. McCandless at Westinghouse Office at 150 Broadway, N.Y.C.

Grogan stated that McCandless made Audions for Dr. Lee de Forest in 1905 and 1906 and also stated that it was not until 1912 that McCandless did any business with Wallace.

Saw McCandless, explained nature of vists, and he brought out a large stack of old manufacturing records of his company, together with some sales records. McCandless went over these records and stated that he made his first tube in 1905 for Dr. Lee de Forest, who had come to him with a Fleming Valve.

- While the records show that McCandless made tubes for de Forest, the there is nothing in the records to show that they were of the tubular type. McCandless feels certain, however, that he made a tubular bulb for de Forest and this fact is substantiated by a circular printed by de Forest in 1906, which clearly shows a tubular Audion. All transactions at this time were with Dr. de Forest or his assistant, Mr. C.D. Babcock.

The only record that McCandless was able to locate today that specified that tubular bulbs had been provided was as follows:

July 9, 1907 - for Dr. de Forest Tubular bulbs 1 and  $\frac{1}{4}$  inches in diameter.

McCandless requests more time to go over records and discuss with Grogan.

\*\*\*\*\*

Investigator (Agent 6-42) reports, March 15, 1927, on interview with McCandless as follows:

All tubes sold to Gernsback were round bulb with candelbra base.

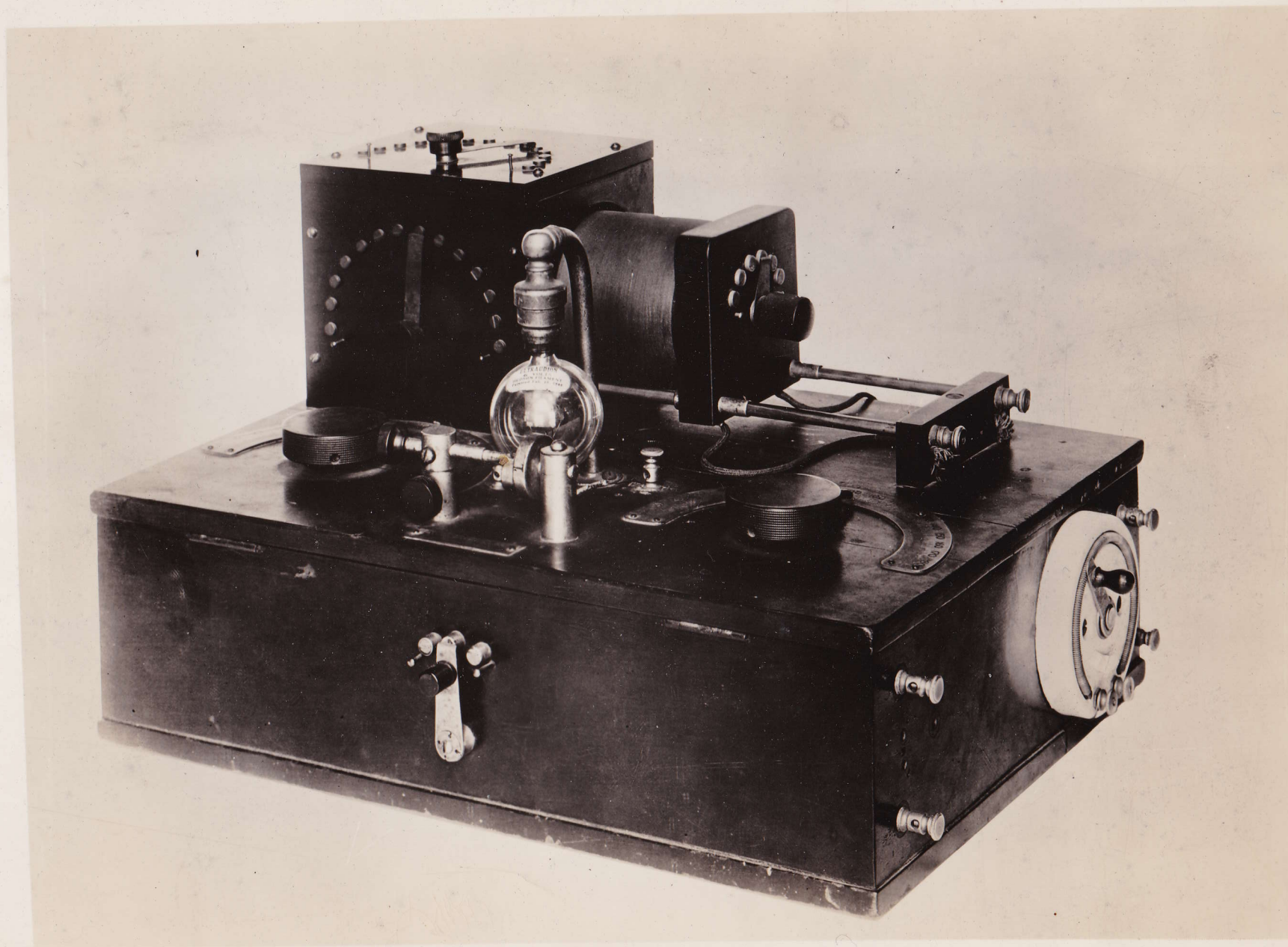
Dr. Goldhorn, on March 6, 1912, purchased a supply of tubes with double grids and plates.

On October 5, 1912, McCandless sent a shipment of tubes to North American Company in New York, but has no information as to type sent.

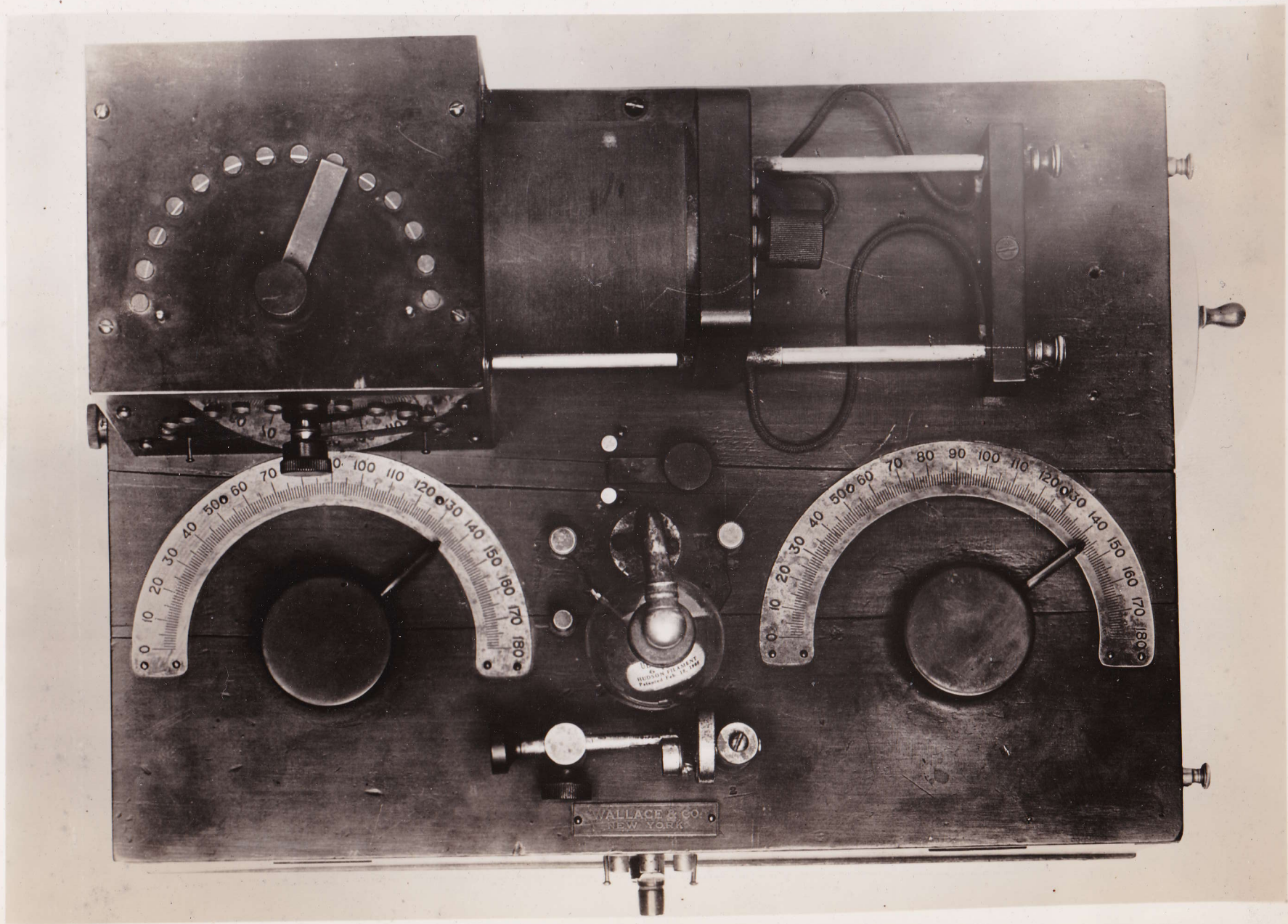
McCandless has large list of tubes sold to Wallace, e.g.:

|                   |                |
|-------------------|----------------|
| February 13, 1912 | 12 round tubes |
| March 8, 1912     | 1 round tube   |
| March 19, 1912    | 1 long type    |
| March 23, 1912    | 7 long type    |

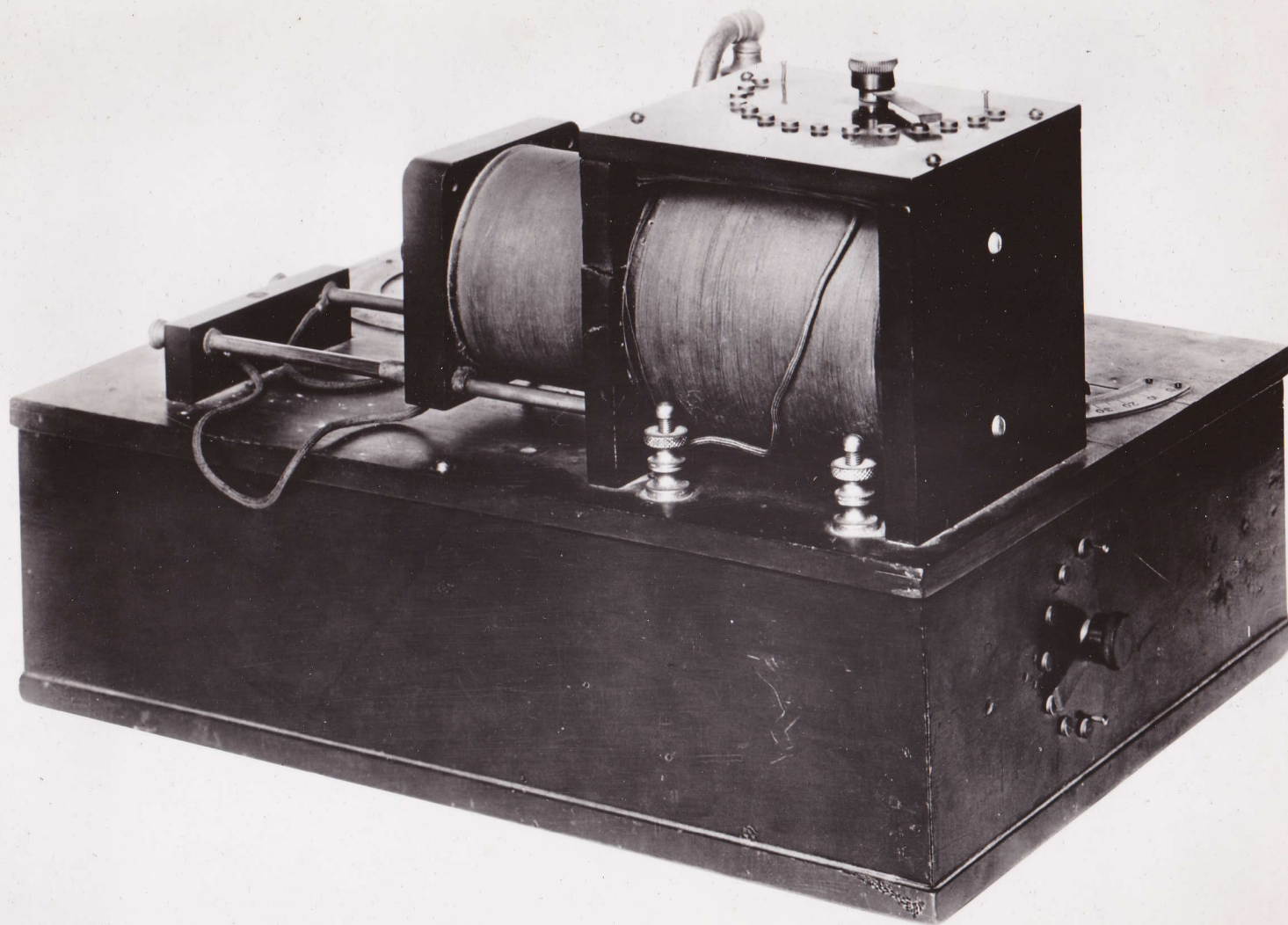




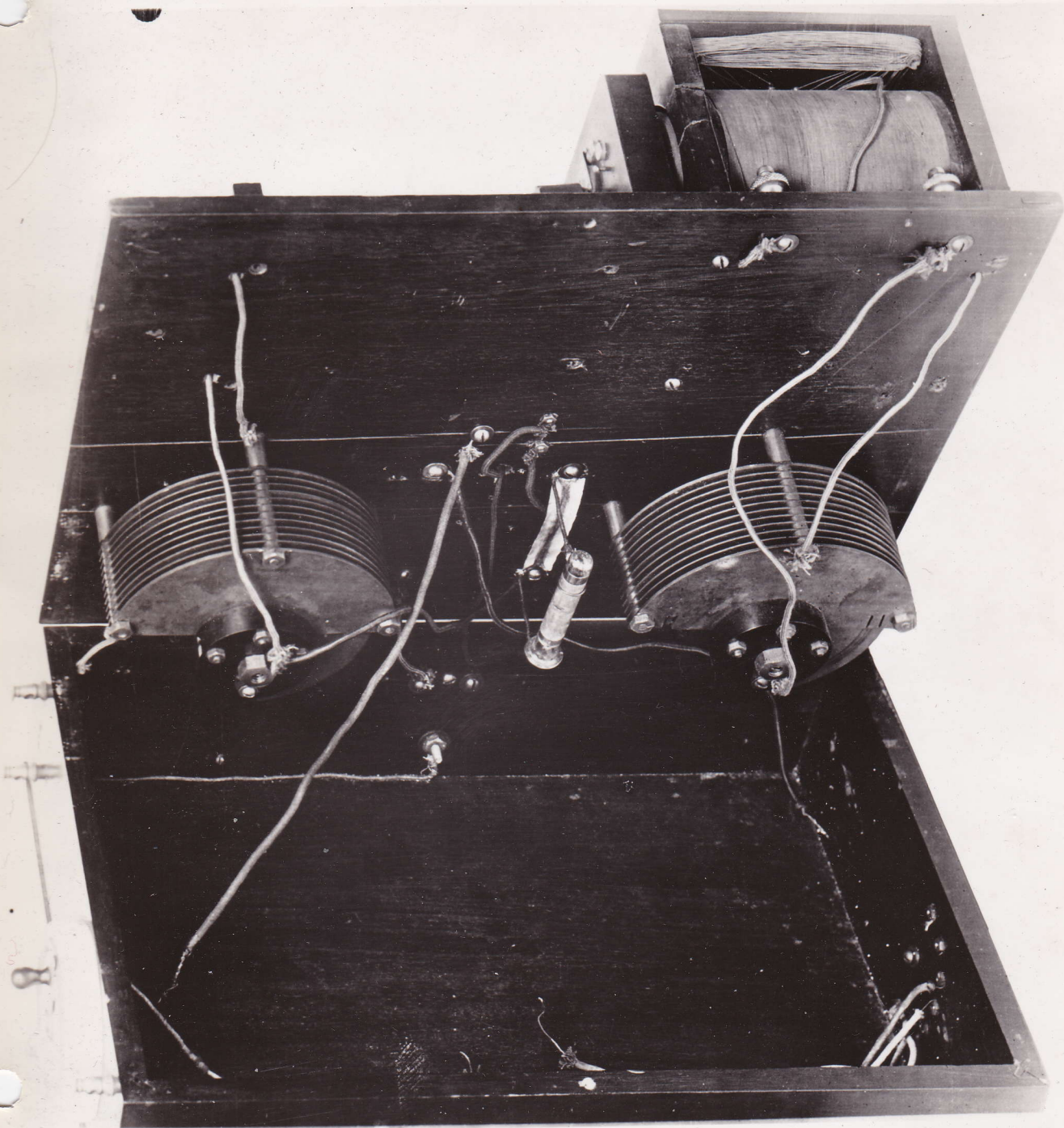














October 7, 1944

Data on Electro Importing Company's "Electro Audion"

The story written below is compounded from information obtained from a number of sources. Some of these sources; advertisements in "Modern Electrics", Electro Importing Company catalogs, statements made by Hugo Gernsback to investigators for Sheffield & Betts (Marconi Co. and R.C.A. attorneys) in the case of R.C.A. vs. E. J. Edmond & Co. Inc. In Equity No. 31/323, United States District Court, Southern District of New York; records of H. W. McCandless & Co.

The "Electro Audion" first appeared in the Electro Importing Company's catalog #10 for the year 1911 (gotten out in May 1911) on page 93b (see attached photostats) and was advertised for the first time in "Modern Electrics" for July 1911 on page 272 (see attached photostats). Exact records as to sales are unobtainable, since all the old records of the E. I. Company records were destroyed in a fire in 1917.

Electro Audions were sold to Anderson & Co., Chicago, (dealers) but Mr. Hugo Gernsback (in 1927) could remember no other dealers in Chicago and could not remember Anderson & Co's. address. (Anderson Light Company) - see next page.

The bulbs used in E. I. Co. Audions were spherical (probably double filament) bulbs obtained from H. W. McCandless & Co. Prices paid by Gernsback varied from \$1.50 per bulb in 1911 and early 1912 to \$2.00 per bulb, with one order in Feb. 1912 at \$2.50 per bulb.

The following is a detailed list of sales by McCandless to E. I. Company taken from McCandless records.

1911

|          |          |         |
|----------|----------|---------|
| July 25  | 1 Audion | \$ 1.50 |
| Aug. 1   | 11 "     | 16.50   |
| Aug. 25  | 24 "     | 36.00   |
| Sept. 13 | 24 "     | 36.00   |
| Oct. 12  | 8 "      | 12.00   |
| Oct. 17  | 17 "     | 25.00   |

Total 104

1912

|         |            |          |
|---------|------------|----------|
| Feb. 2  | 25 Audions | \$ 37.50 |
| Feb. 7  | 4 "        | 10.00    |
| Apr. 7  | 25 "       | 37.50    |
| May 31  | 11 "       | 16.50    |
| June 24 | 14 "       | 21.00    |
| July 12 | 23 "       | 34.50    |



Data on Electro Importing Company's "Electro Audion" (Con't)

1912

|          |             |          |
|----------|-------------|----------|
| Sept. 12 | 25 Audions  | \$ 37.50 |
| Nov. 28  | <u>28</u> " | 56.00    |

Total 156

1913

|          |             |         |
|----------|-------------|---------|
| Jan. 8   | 1 Audion    | \$ 2.00 |
| Jan. 13  | 18 "        | 36.00   |
| Jan. 29  | 19 "        | 38.00   |
| Mar. 4   | 10 "        | 20.00   |
| Mar. 12  | 7 "         | 14.00   |
| Mar. 12  | 17 "        | 34.00   |
| Mar. 29  | 11 "        | 22.00   |
| Apr. 8   | 25 "        | 50.00   |
| Apr. 19  | 25 "        | 50.00   |
| May 5    | 25 "        | 50.00   |
| May 7    | 25 "        | 50.00   |
| Aug. 28  | 6 "         | 12.00   |
| Sept. 19 | 12 "        | 24.00   |
| Oct. 2   | <u>10</u> " | 20.00   |

Total 211

The last appearance of the "Electro Audion" in the E. I. Company's catalog was in 1913 where it appeared on page 11 (see photograph #6423 attached)

According to the recollection of a Mr. Siegal, the "Anderson Light Company" <sup>of Chicago</sup> failed in 1915 and was purchased by a Mr. Olmstead. Siegal worked for Anderson from 1911 until the failure occurred. The Anderson Light Company, according to Mr. Siegal, sold their first Audions in 1912. They were double filament spherical bulbs without any base and were received from the Electro Importing Company in New York.

Anderson says (1927) that he cannot remember what year he started selling Audions, but that he purchased these tubes from the Electro Importing Company of New York. Records of Anderson Light Company have been destroyed.

Tubes delivered to Gernsback by McCandless from Jan. 9, 1912 on had an anchor in the tube to hold the filament in place.



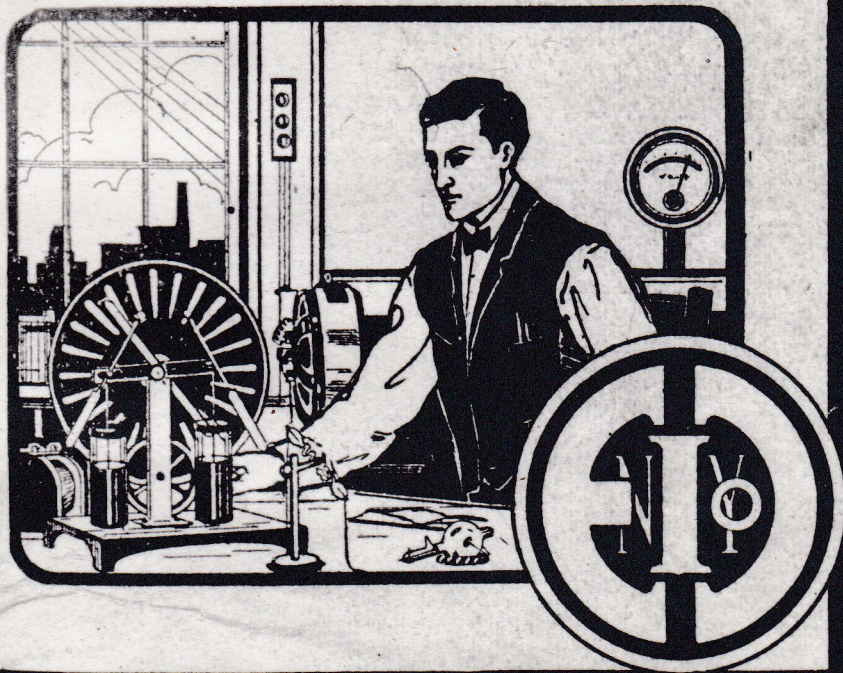
3rd EDITION, 1911—90,000

"EVERYTHING FOR THE EXPERIMENTER"



*The*  
**ELECTRO**  
IMPORTING COMPANY  
233 FULTON ST.  
NEAR GREENWICH ST.  
NEW YORK CITY

Catalog No. 10



Copyright 1911 by T. E. I. Co.

European Office: 23 Rue Henri Maus, Brussels, Belgium

**RETAIL STORE: 69 WEST BROADWAY, NEW YORK**

No Mail Orders Filled From Store.

City patrons will please call at store NOT at 233 Fulton Street



Information re Harry V. Roome and the Roome Tubes  
from BTL Correspondence Files

Case 320036=Vol.A

Letter F.B.Jewett to T.E.Burger (Los Angeles) dated 3/22/16 reads as follows:

" It has come to our attention that one Harry V Roome of 940 West 20th Street, Los Angeles, California is advertising for sals vacuum apparatus very similiar to the Audion and to our telephone repeaters. This is a matter of some interest to us andI accordingly telegraphed you yesterday as follows:

"Purchase from Harry V. Roome, 940 West 20th St., Los Angeles, two Oscilaudion bulbs, list price \$7.50 each. Express same addressed to me personally."

I trust that without too much trouble you will be able to secore the two bulbs, and would suggest that you express them to me personally."

Letter Thomas E. Burger to F.B.Jewett dated 3/23/16, reads as follows:

"Your telegram was received and I telegraphed you last evening that we had procured from Harry B. Roome, two Oscilaudion bulbs. Harry B. Roome is a boy studying at high schooland has secured these bulbs from some firm in San Francisco. He says he has about 20 in stock, but that he is not going to be able to get any more.

You might be interested in the enclosed."

Case 200670-Vol.B

Under dates of 3/21/16 and 3/22/16 will be found copies of the two telegrams referred to above.



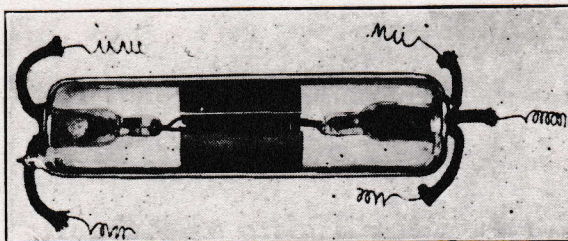
"There is Only One Oscilaudion—The Roome"

Double Filament

# SUPER SENSITIVE OSCILAUDION

\$5.25 Post Paid

**DETECTOR  
AMPLIFIER  
OSCILLATOR**



**DETECTOR  
AMPLIFIER  
OSCILLATOR**

**HARRY V. ROOME**

940 West Twentieth St.  
LOS ANGELES, CAL.

The Oscilaudion is a hot cathode apparatus relying for its basis of operation on a Pure Electron Discharge. Potential changes between the grid and hot cathode (filament) cause similar and greater variations in the electron flow from the hot cathode (filament) to the cold anode (plate). The Oscilaudion is a super sensitive electron relay (repeater) or amplifier. The Oscilaudion differs from the Audion and other types of hot cathode apparatus employing a gaseous medium in a condition of molecular activity. As the Oscilaudion contains no gas, all Oscilaudions show uniformity in sensitivity, and performance, and the erratic action, critical adjustment, and non-uniform performance experienced in gaseous devices are conspicuously absent in the Oscilaudion. A spiral copper grid completely surrounds two tungsten filaments in the Oscilaudion, and an aluminum plate surrounds the grid, thus taking maximum advantage of the electron flow in all directions. The Oscilaudion filaments have exceptionally long life, due to their straight line construction.

The Oscilaudion, in the few months it has been on the market, has already been adopted by the radio laboratories at Harvard University, Cornell University, University of Nebraska, University of Iowa, University of Toronto (Canada), etc., etc. College professors in all parts of the country endorse the Oscilaudion very highly. Advanced experimenters and professional operators have also placed their seals of approval on the Oscilaudion. An experimenter in Boston, Mass., a college man, and member of the Institute of Radio Engineers, sent in a repeat order for forty four Oscilaudions, to resell to his friends after testing out two sample bulbs. Another experimenter in San Diego, Cal., tested out two sample Oscilaudions and was so well pleased that he ordered three dozen more to resell to experimenters in San Diego. Many operators of the U. S. Signal Corps are now using the Oscilaudion in preference to another bulb which has been on the market several years. Indeed, practically all of the Oscilaudion users previously used another make of bulb before adopting the Oscilaudion. Certainly a device which has received such instant and universal recognition from college professors, advanced experimenters and professional operators, is worthy of the consideration of every wireless experimenter.

The results obtained with the Oscilaudion are as gratifying as the letters of commendation. The Oscilaudion has established a new world's long distance receiving record of 10,300 miles (from a 60 K. W. station). Signals from a 30 K. W. station have been copied a distance of 5,800 miles in broad daylight, and 600 meter spark signals have been copied a distance of 5,200 miles at night. All these results were obtained with a **Single Oscilaudion** in connection with an antenna having a fundamental of less than 500 meters. Experimenters who may be skeptical concerning the results obtained should remember that the radio laboratories of the leading Universities would not be using the Oscilaudion, and the Roome Designers could not command the respect and confidence of college professors if the facts were not as represented.

**Warning:** The success of the Oscilaudion has caused competitors to imitate its appearance in an effort to fool experimenters. Some of the imitations have but one filament. The remarkable sensitiveness of the Oscilaudion is not due to its appearance, but to the experience, skill and knowledge of its designers.

**Guarantee:** Every Oscilaudion is guaranteed super sensitive as detector, amplifier and oscillator, and is further guaranteed to reach the user in perfect condition. Every Oscilaudion is sold with the understanding that if the user is not pleased after five days' trial, purchase price will be refunded. Any defective, damaged or unsatisfactory Oscilaudion will be replaced without question. This guarantee does not cover an Oscilaudion burned out from any cause.



## "There is Only One Oscilaudion--The Roome"

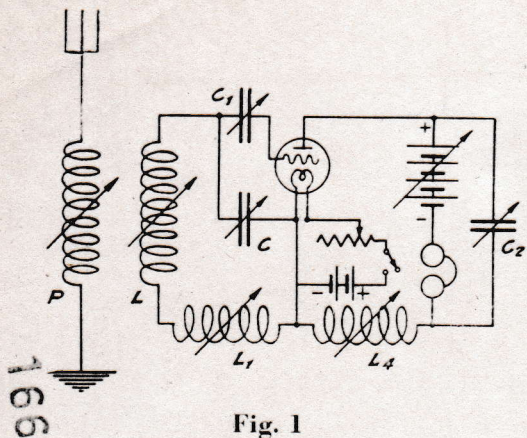


Fig. 1

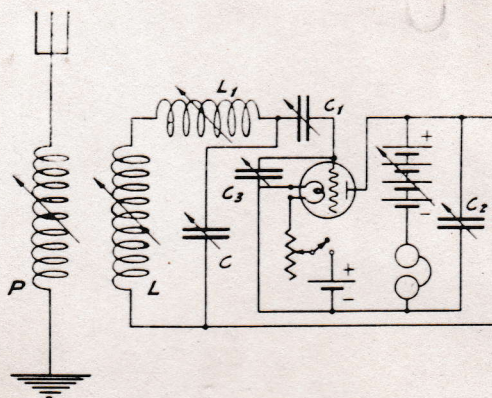


Fig. 2

## Instructions for Using the Oscilaudion

Carefully examine the Oscilaudion. If the grid should be jarred to one side (caused by a shock in shipment) jar the tube on the opposite side against the palm of the hand. The Oscilaudion should be mounted in a vertical position. Four binding posts placed at the corners of a rectangle, two inches by five inches, makes a simple method of mounting the Oscilaudion. Many experimenters use "U" shaped clips bent from strips of bronze or brass. It is also possible to use a screw socket tubular bulb holder for the Oscilaudion. The brown covered wires of the Oscilaudion are the filament connections, the red covered wire is the plate connection, and the green covered wire is the grid connection.

**Filament "A" Battery.** A six-volt 40 ampere hour storage battery is recommended, but dry cells can be used if necessary. A ten ohm rheostat should be used in series with the filament battery, and care should be taken to cut in all the resistance of the rheostat before lighting the filament. Only one filament is used at a time. Each filament will give approximately 1,000 hours of life at the normal current rating of .86 ampere. It is never necessary to burn filament at excessive brilliancy when the Oscilaudion is used in a properly designed Armstrong circuit. An improperly designed circuit is the cause of short filament life and poor results, and often explains the necessity of using an excessive value of "B" battery potential. As a detector the Oscilaudion filament consumes about  $3\frac{1}{2}$  watts, and as an oscillator about 4 watts. For the best results the connection to the hot cathode (filament) must be made at the negative terminal of the lighting battery as shown above.

**High Voltage "B" Battery.** Any battery having a potential of 40-55 volts may be used. Ten or twelve large three-cell flashlight batteries, such as Eveready No. 712 or No. 752, are recommended. Each three-cell battery must test above 3.5 volts. Potentiometer control will quickly run down flashlight cells. A multiple point switch should be used to vary the "B" battery voltage, and every other switch contact should be left blank to avoid short circuits when the switch lever is rotated. Single cell regulation is not necessary. The thermionic current of an Oscilaudion is about 100 micro-amperes. The positive (carbon) terminal of the "B" battery must lead toward the cold anode (plate), and the negative (zinc) terminal of the "B" battery must lead toward the hot cathode (filament). Notice that the negative terminal of the "B" battery leads to the negative terminal of the filament battery. Care should be taken not to allow the filament connections to come in contact with the terminals of the high voltage battery, as the filament would be burned out from such carelessness.

**Circuit.** The diagrams above are two of the celebrated Armstrong circuits. Fig. 2 is the circuit used by the experimenter who established a new world's long distance receiving record of 10,300 miles with a **Single Oscilaudion**. Both Fig. 1 and Fig. 2 are suitable for receiving damped or undamped waves, and for radio frequency amplification or oscillation. Experiments indicate that Fig. 1 is the more sensitive, but the equipment of Fig. 2 is less expensive for the longer wave lengths. Notice that similar notation is used in both circuits. Both circuits may have the same corresponding values of inductance and capacity for the same wave length. In the circuit of Fig. 1 the inductance of the plate circuit [L-4] may be approximately equal to the total inductance of the grid circuit [L and L-1] for all wave lengths.

C may have a maximum value of .0006 M. F. C-1 is seldom used at values of capacity exceeding .0001 M. F. Sometimes a fixed condenser of .0001 M. F. capacity is used for C-1. C-2 may have a maximum value of capacity of .001 M. F. to .00125 M. F. The C-3 variable condenser of Fig. 2 is sometimes omitted, but when it is included it is never used at values of capacity exceeding .0005 M. F. For 200 meter wave lengths the total inductance of the grid circuit may be approximately 300 micro-henrys, for 600 meters 1,000 micro-henrys, and for 10,000 meters the grid circuit may have a total inductance of approximately 60,000 micro-henrys. The amount of loading inductance required for the antenna circuit is dependent on the capacity and inductance of the particular antenna. All oscillating and amplifying circuits will work with an exceedingly small co-efficient of coupling between the antenna and grid circuits, good results being obtained with a co-efficient of .05. All oscillating and amplifying circuits work best when the receivers have a total resistance of 2,000 ohms or more. All inductances should be tested for open circuits, and all condensers tested for short circuits. A single poor connection or short circuit will destroy the efficiency of the entire set.

**References.** For diagrams and a complete discussion of the various Armstrong, Ultraudion, Heterodyne, Audio Frequency Amplification, Wireless Telegraph and Telephone Transmitting, General Electric, and various other circuits see: "Proceedings of the Institute of Radio Engineers," Vol. 3, Part 3, page 215 et seq; Vol. 3, Part 3, page 249 et seq; Vol. 3, Part 4, page 372; Vol. 4, Part 3, page 265 et seq; Armstrong Patent No. 1,113,149; Ultraudion Patent No. 1,170,881; "Experimental Wireless Stations" [1916 Edition] by Philip E. Edelman, St. Paul, Minn. "Applications of the Audion" to be reprinted in full in the Amateur Wireless Magazine, "QST," in the August, 1916, issue; "Electrical Experimenter" for January, 1916, pages 488-489; August, 1916, pages 250-255.

For a simple formula for amateur inductance calculations see "Popular Electricity" for December, 1912, page 848; "Formulas and Tables for the Calculation of Mutual and Self Inductance" [Revised] of the Bulletin of the Bureau of Standards.

For a clear explanation of the various points covering the theory of wireless telegraphy and telephony see the works of Fleming, Zenneck, Pierce, Erskine-Murray and the "Manual for Naval Electricians."

For a discussion of the theory of Hot Cathode Apparatus see "Proceedings of the Institute of Radio Engineers," Vol. 3, Part 3, page 261 et seq; articles by Dushman and Langmuir in Vol. 18 [1915] of "General Electric Review"; "Proceedings of the Royal Society of London," Vol. 38, page 219 et seq; Vol. 47, page 118 et seq; Vol. 74, page 476 et seq; "High Vacuum, Hot Cathode Apparatus" by Prof. Hund, [Vol. 10, Number 6, of the Bulletin of the University of Southern California, Los Angeles, Calif.]

**Experimenters are urged to consult the eminent authorities cited above.**

**Note.** Harry V. Roome does not handle switches, rheostats, batteries, etc. These may be purchased from any electric store or from the mail order houses stocking electric supplies.



R. C. A. vs. E. J. EDMONDS & CO. INC.

Mr. Grogan of the Westinghouse Plant on Steuben Street, Brooklyn has stated by telephone that he has in writing the records of all of the McCandless audions from 1905 to 1911 or 1912; <sup>to date</sup> and there- after in typewritten form.

He has stated that he furnished audions to Wallace & Co. <sup>and on mar. 19, 1912,</sup> on May 10, 1912, supplying him, he believes, with the tubular form rather than the spherical form generally used by DeForest Company.

From his records, and those of Mr. McCandless it is believed possible to be able to trace each and every development of the audion construction, as for example when the first Hudson filaments were made; double grids; double plates; etc.

For the purposes of the present suit it would be well to know the dates of all the tubes sold to Wallace; the numbers of tubes; the types etc., and where Wallace was when these tubes were sent to him.

It would also be desirable to know when the first valves were sent to the Federal Telegraph Co., <sup>Palo Alto,</sup> ~~San Francisco,~~ <sup>San Francisco,</sup> Cal., as well as the type of the tube.



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