



RADIO

CIRCUIT WITH GRID LEAK RESISTANCE

Takes Place of "C" Battery—How Impedance of Flow Is Determined.

Fig. 13 shows a set of curves for a three-electrode vacuum tube circuit containing a grid leak resistance as shown in Fig. 11 instead of a "C" battery with the same symmetrical alternating difference of potential applied to the grid circuit.

There being no "C" battery potential applied to the grid, the grid in Fig. 11 is normally at zero potential with respect to the filament. As the positive half of the first cycle of the alternating difference of potential is impressed upon the grid circuit—see Fig. 13—the grid is made positive

with respect to the filament. Being positive with respect to the filament, causes a certain number of electrons, which are negative charges, to be attracted and caused to give up their negative charges to the grid. During the next or negative half of the cycle of the applied grid potential the grid is made negative with respect to the filament but does not lose the electrons again. Thus a negative charge is built up on a grid during the positive portion of each cycle, the cumulative effect of which is to produce a decrease of the plate current, during the period that the alternating difference of potential called a wave train is applied to the grid.

After the alternating difference of potential applied to the grid has ceased, the grid does not immediately lose its negative charge. The grid leak forms a high resistance path for the negative charge of the grid to leak off to the filament slowly. If no grid leak were used, the grid

NEW RADIO FILTER A MARVEL

Campbell Device That Separates Telephone and Telegraph Messages.

Although much has been said and written about the remarkable filters employed by the telephone lines and by advanced radio workers for the separation of telephone and telegraph messages, says the Scientific American, it remained for Dr. Frank B. Jewett, chief engineer of the Western Electric company, to demonstrate how the filter permits of transmitting radio, telephone and telegraph messages simultaneously, and of separating these messages at the receiving end, at a meeting of the American Institute of Electrical Engineers.

The present electrical filter is the invention of Dr. G. A. Campbell, a telephone engineer, and makes it possible to separate the various frequencies at which the individual telephone and telegraph messages are carried. The detected electrical current in a radio receiving set is passed through the filter which separates the frequencies of the telegraph message from those of the telephone.

The filter differs materially from the ordinary tuned circuits familiar to the radio enthusiast, since it separates not single frequencies but bands of frequencies of any predetermined width.

The filter makes it possible to separate the band of frequencies comprising the telephone message from the band comprising the telegraph message. It can also separate one telephone message from another.

"Ground Antennae"

Some relief from bothersome radio "strays" in summertime can be obtained with sets having good amplifiers by using a "ground antennae." This is a long insulated wire run in a shallow trench or on the surface of the ground. The ground wire should be run in the direction of the station from which the most signals are to be received, and should preferably be several hundred feet long.

To Regulate Wave Lengths.

A variable condenser when properly connected in the antenna circuit may be used either to lengthen or shorten the wave length range. Besides this, the degree of regulation is much finer, for at best the loading coil can tune in only to within a single turn, if a loading coil of the tuning coil type is used.

would soon collect a sufficient negative charge to reduce the plate current to zero and the tube would cease to function.

A grid leak having too low resistance will not allow a sufficiently high negative charge to collect on the grid, resulting in a very small plate current reduction, and weak response in the telephone receivers.

On the other hand, if the grid leak is of too high resistance, too high negative charge will collect on the grid and the condition of no grid leak will be approached.

In any electrical circuit that has a difference of potential applied to it, the current that will flow depends upon the "impedance" of that circuit; just as in the flow of water through a pipe, the quantity of water that will flow when any given pressure is applied depends upon how much the flow through the pipe is impeded by the friction of the particles of water against the sides of the pipe and against one another.

In the electrical circuit, the relation between these three quantities is that the current which will flow is equal to the applied differences of potential divided by the impedance, where the current is in amperes, the applied difference of potential is in volts and the impedance in ohms. On

Fig. 13—the grid is made positive

with respect to the filament, the impedance is equal to the applied voltage divided by the current. The impedance of a vacuum tube plate circuit, internally between the filament and the plate, when the grid is at zero potential, is an important constant of a vacuum tube and is called the internal plate impedance.

The internal grid impedance of a vacuum tube used in a radio set as a detector, determines the impedance of the telephones that will give best results when connected in the plate circuit of that particular tube.

It is then not only the resistance of a pair of telephones, but also the inductance and the distributed capacity of the winding that cause the maximum current to flow in the telephones

for a given change in grid potential. The internal plate impedance of a vacuum tube varies only slightly with different plate voltage. It is more an inherent characteristic of the tube which is determined by the design.

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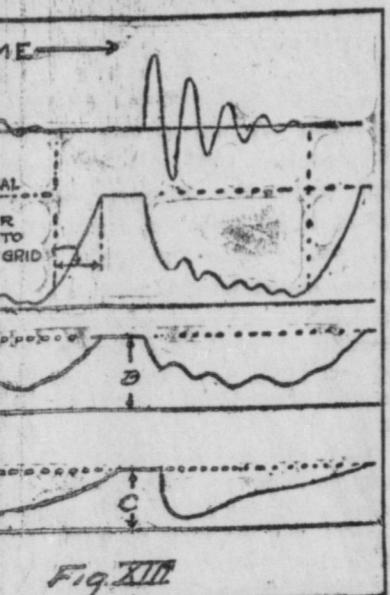


Fig. XIII

DOINGS IN SOCIETY

CLUB CALENDAR

Wednesday

Tri Kappas—Mrs. Albert Sellemeyer.
Delta Theta Tau—Special Meeting.
Psi Iota Xi—Mrs. Gertrude Hite.

Thursday

Presbyterian Home and Foreign Missionary society, Mrs. Clyde Noble.
Mount Pleasant L. A. S. with Mrs. Jesse Singleton.

Concord Aid and Missionary Society with Mrs. Bernice Magley.
Presbyterian Womens Home and Foreign Missionary society—Mrs. Clyde Noble.

Pot luck supper at Ben Hur Hall.

Friday

A special meeting of the Delta Theta Tau will be held this evening at seven o'clock at the home of Miss Florence Bremerkamp. Members please be present.

The Live Wire club of the Evangelical church will meet at the home of Mr. and Mrs. Ernst Foreman, 828 Russell street, Thursday evening at 7:30. Every member should be present.

Mr. Henry Hite and daughters had as their guests for dinner Monday evening, Mrs. Christena Niblick and Mr. Jesse G. Niblick.

Mr. and Mrs. Frank Breiner and Mr. and Mrs. Roma Breiner entertained a number of guests Sunday in honor of the third birthday of little Virginia Breiner, daughter of Mr. and Mrs. Roma Breiner. A delicious dinner was served at the noon hour, the afternoon was spent in playing tennis and music. A number of pictures of the little ones were taken. Those present were, Mr. and Mrs. Milo Hilyard. Miss Julia DeBruler and Mr. Fred Ewig, of Ft. Wayne; Miss Mable M. Breiner of Pittsburg. Mrs. Wm. Martin and daughters, Marcia and Mary Maxine and Mr. Charles Breiner of this city. A lunch was served in the evening, the main feature being a birthday cake with three candles and the color scheme of white and pink prevailed.

The Aid society and Missionary society of the Concord church will meet with Mrs. Bernice Magley on Thursday afternoon. Mrs. Fannie Kunkle is the leader for the meeting.

The Adams County Telephone people held their annual picnic at the popular Berne swimming pool last Sunday. Peggy Frank and P. R. Early were the champion swimmers, while Alva Baker made a few fancy dives. All came with well filled baskets and at 6:00 enjoyed the gorgeous picnic supper. After supper another swim was enjoyed, then all left in trucks for their various homes.

The Presbyterian Womens Home and Foreign Missionary society will meet tomorrow afternoon at 2:30 o'clock at the home of Mrs. Clyde Noble on South Third street. A good program has been arranged and all members and their friends are requested to be present.

The program to be given is as follows:

Hymn.
Business period.
Hymn.
Devotion exercises by Mrs. Roy Runyon.

Life of Adoniran Judson by Mrs. Jesse Sutton.
Special Music.

Round Table of Missionary Events.
Offering.
Mizpah Benediction and social hour.

The Psi Iota Xi sorority will meet this evening at 7:30 o'clock at the home of Mrs. Gertrude Hite. All members are urged to be present.

Members of the local Ben Hur lodge will give a pot luck supper in the lodge hall on Friday night for the Ben Hur children and the Juniors Ben Hur. All members of the lodge are requested to attend and bring their children and a lunch.

JOHNSON AND MOYER DID NOT MAKE FLIGHT IN BALLOON AT BLUFFTON

Curt Johnson and Hugh Moyer, local young men who were scheduled to make a balloon ascension in Bluffton yesterday did not make the ascension.

Johnson stated today that he and Moyer took their Balloon to Bluffton to make the flight but that the management at that city had failed to provide the polls and other necessary apparatus which they had agreed to furnish.

He said they waited there until 3 o'clock and then returned home.

WANT ADS EARN \$-\$

FARM RESIDENCE BURNED TUESDAY

House on George Brown Farm Occupied by Lewis Stump Burned

A large farm house on the farm of Mrs. George Brown, three and one-half miles southeast of this city, was destroyed by fire about 11 o'clock last night. The building was occupied by Lewis Stump, who has the farm rented. The origin of the fire has not been determined.

R. J. Harting of this city, who was passing the house about 11 o'clock, noticed the building on fire and hurried to the door to awaken the members of the Stump family who were asleep in the building. It was several minutes before all of them were awakened and out of the house.

The fire had gained so great headway before it was discovered that efforts to extinguish the blaze were futile. Only a few pieces of furniture were carried out of the house before the roof and walls collapsed.

The house was a story and a half frame building. Mrs. Brown carried \$500 worth of insurance on the building but it is not known whether or not Mr. Stump carried insurance on the contents. However the \$500 insurance is only a small per cent of the amount the building was worth.

No one can offer any idea as to how the fire originated.

ELKS MEETING TONIGHT

The regular monthly meeting of the Elks lodge will be held at the hall this evening. Business of importance relative to the new home will come up and all members are urged to be present.

FIFTY YEARS AGO

A woman in Lynn, Mass., was steeping herbs in her kitchen stove according to a recipe of her own, to furnish medicine for the women of the neighborhood. Today, a stone's throw from the little house where she lived, there is a four-story laboratory, making the same medicine for the women of the world. During the last year almost 500 tons of carefully selected herbs were used in the manufacture of Lydia E. Pinkham's Vegetable Compound. A woman's medicine for woman's ailments. Have you tried it?

You Guard Against Burglars, But What About Rats?

Rats steal millions of dollars' worth of grain, chickens, eggs, etc. Destroy property and are a menace to health. If you are trouble with rats, try RAT-SNAP. It will surely kill them—prevent odors. Cats or dogs won't touch it. Comes in cakes. Three sizes, 25c, 50c, \$1.00. Sold and guaranteed by Holthouse Drug Co., Lee Hardware Co.

BANK STATEMENT

REPORT OF THE FINANCIAL CONDITION OF THE OLD ADAMS COUNTY BANK

at Decatur, in the State of Indiana, at the close of its business on June 30, 1922.

C. S. NIBLICK..... President E. X. EHINGER..... Vice-President F. M. SCHIRMEYER..... Ass't, Cashier A. SCHEUMANN..... Ass't, Cashier

Capital Stock—paid in..... \$1,129,881.95
Overdrafts..... 4,066.91
U. S. Bonds..... 26,973.40
Other Bonds and Securities..... 10,244.95
Banking House..... 95,275.53
Furniture and Fixtures..... 9,260.68
Due from Banks and Trust Companies..... 76,137.11
Cash on Hand..... 39,030.95
Cash Items..... 4,075.35
Current Expenses..... 11,460.47
Taxes Paid..... 2,517.68
Interest Paid..... 15,808.84
Profits and Loss..... 94.93
Trust Securities..... 308.54
Other Assets, Rev. Stamps..... 89.93
Total Resources..... \$1,425,227.11

LIABILITIES
Demand Deposits..... \$433,300.54
Demand Certificates..... 633,039.72 1,068,300
Due to Banks and Trust Companies..... 66,125
Bills Payable..... 56,125
Notes, etc., Rediscounted..... 10,000
Other Liabilities..... 72,000
Total Liabilities..... \$1,425,227.11

State of Indiana, County of Adams, ss:

I, E. X. Ehinger, Cashier of the Old Adams County Bank, do solemnly swear that the above statement is true.

E. X. EHINGER, Cashier

Subscribed and sworn to before me, this 5th day of July, 1922.

My commission expires Nov. 25, 1925.

JAMES T. MERRYMAN, Notary Public

The Directors

48

YEARS

OF

SAFE

BANK-

ING

Are large stock-holders and recognize their responsibility to depositors by making personal examinations and have an accurate knowledge of the affairs of the bank.

W. J. Vesey G. T. Burk
John Niblick L. G. Ellington
F. M. Schirmeyer E. X. Ehinger
C. J. Voglewede C. S. Niblick
L. C. Waring

We invite accounts of ALL desiring superior service of a bank equipped to transact any banking business.

Old Adams County Bank

The friendly Bank

New Bank Building

Two Sides of Turnover

The alert business man dealing with present day conditions knows that the big word today is "Turnover." Whether he be a merchant, manufacturer, jobber, or banker, he sees that one thing with a clear vision unbiased by the limits of his own business. It is in the air, and on the tip of every tongue.

And yet many—entirely too many—are thinking on only one side of Turnover. They think of it as meaning rapid selling—putting money in and getting it out quickly and at a profit. They realize that they must put greatly increased efforts back of all their plans for selling and distribution.

The other half of Turnover is the consumer. All selling plans and efforts fail if the consumer doesn't want to buy. His desire for the product must be created. He must meet the seller half way. He must be in a mood to buy before the salesman meets him across the counter.

That is the function of Advertising—to create consumer de-

mand and consumer preference. With this demand as a fact all selling plans have a chance to succeed. Without it they fail. The only chance for salesmanship to succeed without an existing demand is for salesmanship to assume the task that belongs to advertising—the task of creating demand.

If the present efforts that are being put into selling were amply supported by a corresponding effort to create consumer demand through Advertising, the business conditions of this country would be rapidly changed into an era of great prosperity—in spite of Old World conditions and everything else.

The proof of this is in the fact that right now, under these very conditions, the manufacturers who are putting proper emphasis on creating a demand for their product, as well as selling it, are actually getting the high turnover that others are trying so strenuously to get through intensive selling.