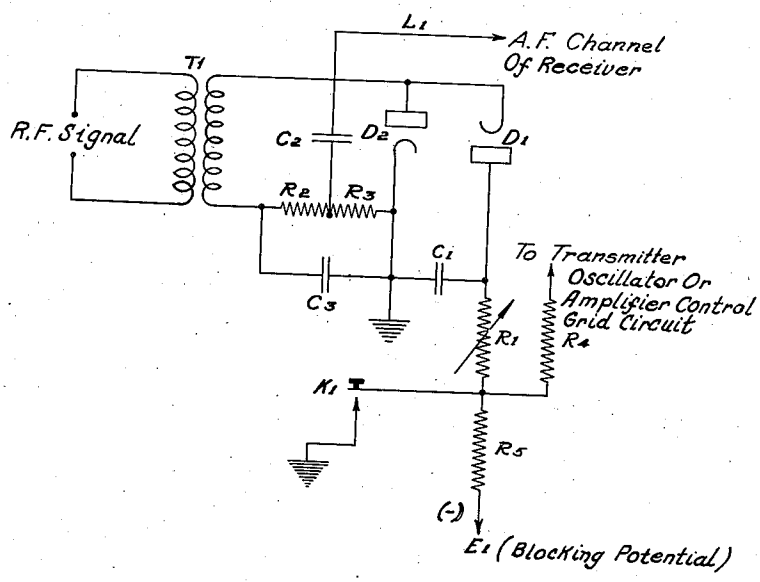
March 31, 1942. E. TOTH 2,277,731

MEANS FOR SILENCING A RECEIVER DURING OPERATION OF A TRANSMITTER

Filed Jan. 22, 1941



INVENTOR
Emerick Toth
BY
ATTORNEY

Patented Mar. 31, 1942

2,277,731

UNITED STATES PATENT OFFICE

2,277,731

MEANS FOR SILENCING RECEIVERS DURING OPERATION OF TRANSMITTERS

Emerick Toth, Cheverly, Md.

Application January 22, 1941, Serial No. 375,419

4 Claims. (Cl. 250—13)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

This invention relates to a means to silence a radio receiver which is being used in conjunction with a transmitter keyed by removing a negative blocking bias from its master oscillator grid or an amplifier grid. It is an object of this invention to provide such a means which will allow any degree of receiver silencing which is found desirable. The single figure of the drawing is a diagrammatic view of the circuit used in carrying out the invention.

In the drawing D_1 and D_2 indicate two diodes which may be separate or may be in the form of a duplex diode. They are so connected that when unblocked or operative they together will pass a complete alternating current wave as impressed on the secondary of transformer T_1 upon which is normally impressed the R. F. or I. F. signal received by the receiver. The output of these diodes is taken off by means of line L_1 to the A. F. channel, the line L_1 connecting through coupling condenser C_2 to a point in the plate-cathode circuit of diode D_2 located between filter resistor R_2 and load resistor R_3. An R. F. filter condenser C_3 is shunted around resistances R_2 and R_3. A bypass condenser C_1 is located between the plate of D_1 and the cathode of D_2. The diode D_2 in conjunction with its associated circuit components C_2, C_3, R_2, and R_3 operates normally as a detector of the R. F. and I. F. signal impressed upon transformer T_1. The key K_1 serves to ground the grid of the oscillator or of some amplifier stage in the transmitter, thereby removing the blocking [negative] bias impressed upon the aforesaid grid by voltage E_1 through resistors R_4 and R_5. Resistor R_5 protects the voltage source E_1 from direct short circuit to ground and R_4 serves to filter the transmitter grid circuit. The plate of diode D_1 is connected to the key through resistor R_1 which may be variable.

The diode D_1 in conjunction with components C_1 and R_1 operates as a silencing device in the following manner: The plate of D_1 is normally biased negative by bias voltage E_1 acting through resistors R_1 and R_5. When key K_1 is closed, the bias voltage acting on the plate of D_1 is reduced to zero and the diode D_1 becomes conductive on alternate half cycles of the R. F. or I. F. signal voltage. If the resistance of R_1 is zero this effectively prevents rectification by D_2 by providing conductance in the opposite direction. Since each of the diodes pass on alternate half cycle of the signal wave form, there will be no response in the A. F. channel. However, by varying the value of R_1, the effectiveness of diode D_1 can be varied from the completely effective condition just described to one which allows any desired response up to complete rectification by diode D_2. As the value of this resistor is increased above zero a D. C. bias is built up at the plate of D_1. This in conjunction with condenser C_1 serves to limit the effectiveness of D_1 in opposition to D_2. By properly selecting the values of R_1 and C_1 it is possible as stated above to adjust the degree of silencing attained between wide limits. Typical circuit values could be as follows: D_1, D_2=6H6 diode; C_1=0.1 mf.; C_2=.005 mf.; C_3=250 mmf.; R_1=0 to 1 megohm; R_2=50,000 ohm; R_3=250,000 ohm; R_4=1000 ohm; R_5=10,000 ohm; E_1=50 volts D. C.

While the disclosure has been restricted to what is now considered the preferred form of the invention, it is to be understood that the invention is to be limited only by the scope and limits of the appended claims.

The invention described herein may be manufactured and/or used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

1. Means adapted to silence a receiver during the operation of a transmitter having a key, comprising a pair of half wave rectifiers each so connected as to pass, when conducting, an alternate half cycle of the R. F. signal wave received by said receiver, means normally blocking one of said rectifiers and means operated by the key of said transmitter to unblock said normally blocked rectifier.

2. Means adapted to silence a receiver during the operation of a transmitter having a key, comprising a pair of half wave rectifiers each so connected as to pass, when conducting, an alternate half cycle of the R. F. signal wave received by said receiver, means normally blocking one of said rectifiers, means operated by the key of said transmitter to unblock said normally blocked rectifier, and means to vary the degree of the unblocking action of said unblocking means.

3. Means adapted to silence a receiver during the operation of a transmitter, comprising a pair of diodes, each so connected as to pass, when conducting, an alternate half cycle of the R. F. signal wave received by said receiver, a source of voltage, means normally applying said voltage to said transmitter and to one of said diodes in a manner to block the operation of said diode and said transmitter, and means for

simultaneously removing said blocking voltage from said diode and said transmitter.

4. Means adapted to silence a receiver during the operation of a transmitter, comprising a detector circuit having two branches, a pair of diodes connected across said branches in such a manner that each, when unblocked, will be conducting in the opposite direction to the other, means leading the output of said diodes to the A. F. channel of said receiver, a source of voltage, means applying said voltage to the plate of one of said diodes and to said transmitter in a manner to block said diode and said transmitter, means to regulate the value of said voltage as applied to said plate and means to simultaneously remove said blocking voltage from said plate and said transmitter.

EMERICK TOTH.