

Sept. 1, 1936.

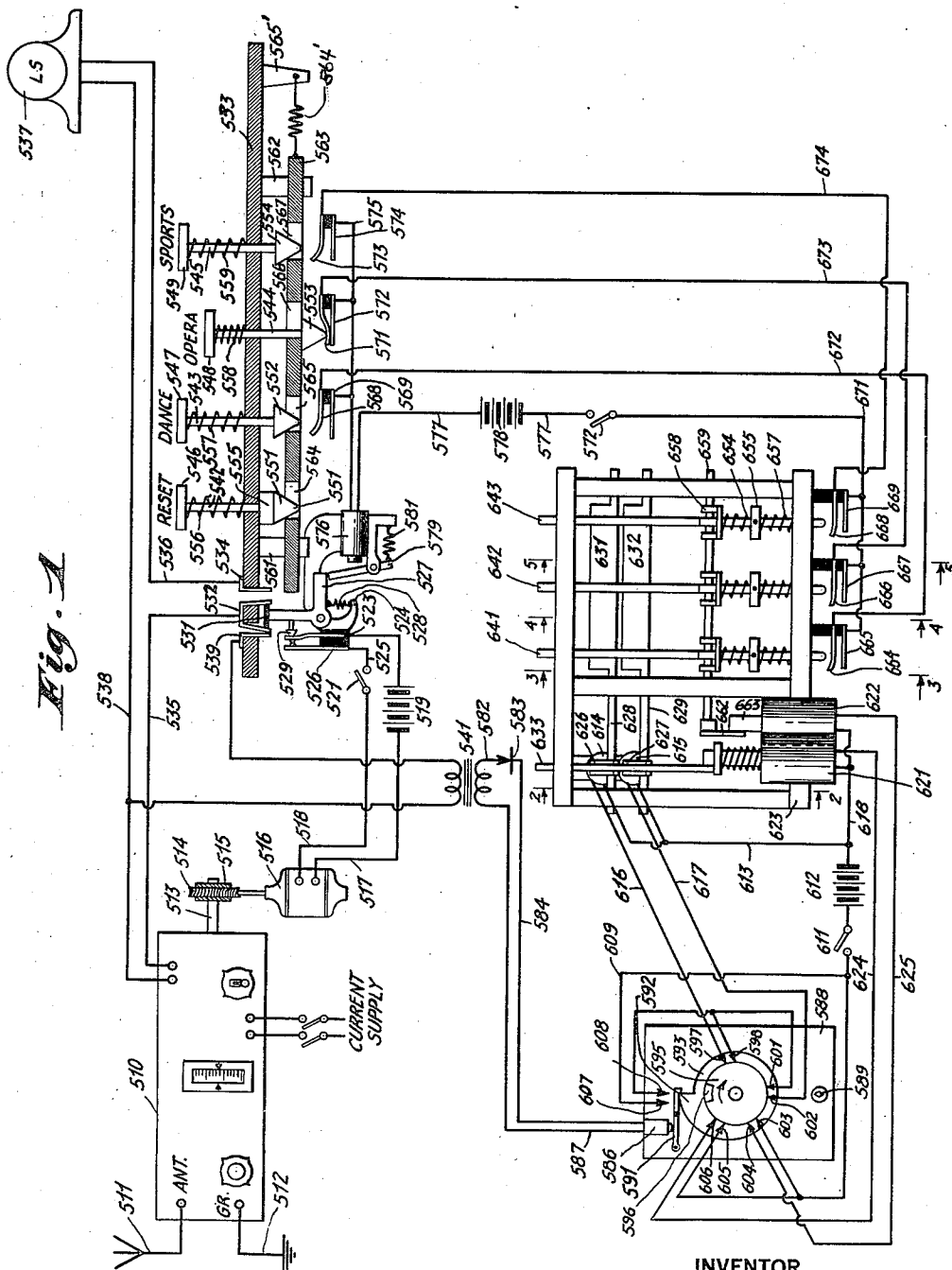
J. H. HAMMOND, JR

2,052,708

AUTOMATIC STATION SELECTOR

Original Filed May 25, 1932

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 2

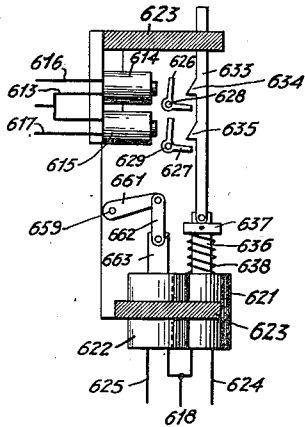


Fig. 3

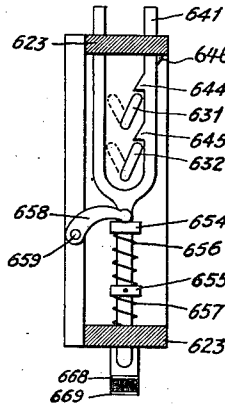


Fig. 4

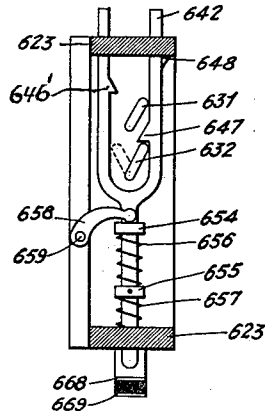


Fig. 5

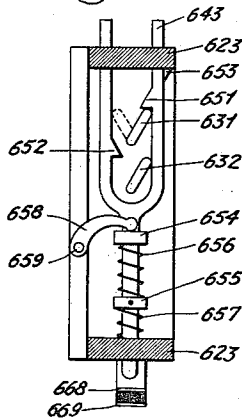


Fig. 6

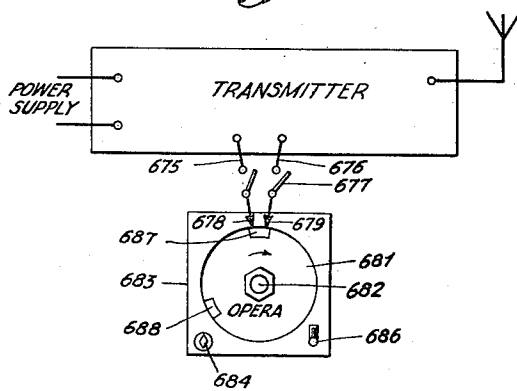


Fig. 7

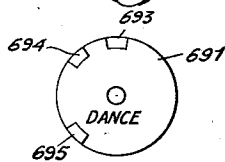
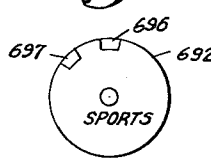


Fig. 8



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UNITED STATES PATENT OFFICE

2,052,708

AUTOMATIC STATION SELECTOR

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Application May 25, 1932, Serial No. 613,361
Renewed January 4, 1936

25 Claims. (Cl. 250—2)

The present invention relates broadly to communication systems and more particularly to automatic program selecting means therefor.

Briefly, the present invention relates to an automatic program selector to be used in conjunction with tunable receiving apparatus wherein settable means are provided which condition the automatic program selector mechanism so as to be responsive to a predetermined transmitted signal indicative of the type of program to be transmitted from a suitable transmitter station.

An object of this invention is to provide an automatic means in connection with a radio receiver which can be set to pick-up any desired type of broadcast program, such for example as dance music, opera, sports, etc.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims.

The invention itself, however, both as to its organization and method of operation will best be understood by reference to the following description taken in connection with the accompanying drawings in which:—

Fig. 1 is a diagrammatic view of the invention as applied to a radio receiver.

Fig. 2 is a sectional elevation taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional elevation taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional elevation taken on line 4—4 of Fig. 1.

Fig. 5 is a sectional elevation taken on line 5—5 of Fig. 1.

Fig. 6 is a diagrammatic view of the transmitter used in connection with this invention.

Fig. 7 is a second type of commutator used in connection with Fig. 6.

Fig. 8 is a third type of commutator used in connection with Fig. 6.

Referring to the form of the invention shown in Figs. 1 to 6 a standard radio receiver 510 is used which is provided with an antenna 511 and a ground connection 512. The tuning condensers of this receiver are so constructed that they can be continually rotated and the shaft 513 on which the moving plates are mounted may project outside the receiver 510 as shown and is secured there to a worm wheel 514 which meshes with a worm 515 which is mounted on the shaft of a motor 516. This motor is connected by two conductors 517 and 518; the former of which is connected to a battery 519 and the latter to a switch 521. The other side of the battery 519

is connected by a conductor 522 to a contact 523 which is mounted on but insulated from the frame 524 of the selector mechanism.

The switch 521 is connected by conductor 525 to a second contact 526 which is also mounted on and insulated from the frame 524. Pivoted to this frame is an L-shaped member 527; one arm of which is connected by a spring 528 to the frame 524. The other arm is provided with an insulating button 529 which engages the contact 532. The upper end of this arm is provided with a piece of insulating material 531 which engages the two arms of the U-shaped contact 532, which is mounted on a plate of insulating material 533. Adjacent to one arm of the contact 532 is a second contact 534. The contact 532 is connected by a conductor 535 to one side of the output circuit of the receiver 510 and the contact 534 is connected by a conductor 536 to one terminal of a loudspeaker 537. The other side of the output circuit of the receiver 510 is connected by a conductor 538 to the other terminal of the loudspeaker 537. Adjacent to the contact 532 is a third contact 539 which is connected to one side of the primary of a transformer 541; the other side of which is connected to the conductor 538.

Slidably mounted in the plate 533 are four rods 542, 543, 544 and 545; to the upper ends of which are secured disks 546, 547, 548 and 549 respectively. These disks are suitably engraved with the words Re-set, Dance, Opera, Sports, etc. To the lower ends of these rods are secured four cone-shaped members 551, 552, 553 and 554; the member 551 being provided with a cylindrical section 555. Between the plate 533 and the disks 546, 547, 548, and 549 are four springs 556, 557, 558 and 559 respectively.

Slidably mounted in two brackets 561 and 562 is a plate 563; to the right hand end of which is connected a spring 564; the other end of which is connected to a bracket 565 carried by the plate 533. In the plate 563 are four circular openings 564, 565, 566 and 567. These openings are slightly larger than the corresponding cones. Located below the cone 552 is a pair of cooperating contacts 568 and 569. Below the cone 553 is a pair of cooperating contacts 571 and 572 and below the cone 554 is a pair of cooperating contacts 573 and 574. These contacts may be suitably mounted on but insulated from the frame 524 and also from each other.

The contacts 569, 572 and 574 are connected by conductor 575 to one side of the winding of an electro-magnet 576; the other side of the winding of which is connected by a conductor 577 to one

side of a battery 578. The magnet 576 is provided with a pivoted armature 579 which is normally held in the position shown by means of a spring 581.

5 The secondary of the transformer 541 is connected by a conductor 582 to a rectifier 583 which is connected by a conductor 584 to one terminal of an electric magnet 586; the other terminal of which is connected by a conductor 587 to the
10 other side of the secondary winding of the transformer 541. The magnet 586 is located on the casing of the clockwork mechanism 588 which is wound by means of a square pin 589. Pivotal-ly mounted adjacent to the magnet 586 is an
15 armature 591 which is bent to engage the tooth 592 of a single tooth ratchet wheel 593. This wheel is secured to the shaft 594 of the clockwork mechanism 588. Also secured to the shaft 594 is a commutator 595 made of insulating material and provided with a conducting segment
20 596. Located around this commutator are four pairs of contacts, 597—598, 601—602, 603—604, and 605—606. For the particular embodiment shown, these pairs of contacts are arranged so that contact segment 596 will engage 597 and
25 598, when it has rotated 76° clockwise from the position shown in Fig. 1; 601 and 602 when rotated 179°; 603 and 604 when rotated 240°; and, 605 and 606 when rotated 300°. Located adjacent
30 to the armature 591 are two contacts 607 and 608.

The contacts 608, 598 and 601 are connected together and the contact 607 is connected by a conductor 609 to the contact 605 and through a switch 611 to one side of a battery 612, thence
35 by a conductor 613 to two electro-magnets 614 and 615 mounted on a frame 623 (see Fig. 2). The other side of the windings of these magnets are connected by conductors 616, 617 to the contacts 597 and 602 respectively. The conductor
40 613 is connected by a branch conductor 618 to two solenoids 621 and 622 which are mounted on a frame 623; the other side of the windings of these solenoids are connected by conductors 624 and 625 to the contacts 606 and 604 respectively.

45 Located adjacent to the magnets 614 and 615 are two L-shaped armatures 626 and 627 which are mounted on rods 628 and 629. These rods are pivoted in the frame work 623 and have secured thereto flat plates 631 and 632. Located
50 adjacent to the armature 626 and 627 is a rod 633 provided with two teeth 634 and 635. The lower end of the rod 633 is pivoted to the core 636 of the solenoid 621. A collar 637 is pinned to this core and between this collar and the solenoid is mounted a spring 638.

55 Slidably mounted in the frame 623 are three Y-shaped members 641, 642 and 643. The member 641 (see Fig. 3) is provided with three teeth 644, 645 and 646. The teeth 644 and 645 cooperate
60 with the plates 631 and 632 and the tooth 646 engaging the frame 623. The member 642 is provided with three teeth 646', 647 and 648 which engage the plates 631, 632 and the frame 623 respectively. The member 643 is provided with
65 three teeth 651, 652 and 653 which engage the plates 631, 632 and the frame 623 respectively.

70 Slidably mounted on the lower part of the members 641, 642 and 643 are three collars 654; pinned to the three members 641, 642 and 643 are three collars 655. Between the collars 654 and
75 655 are three springs 656 and between the collar 655 and the frame 623 are three springs 657. The springs 656 are much stronger than the springs 657. Engaging the collars 654 are six arms 658 which are secured to a shaft 659; to

the end of this shaft is secured an arm 661 to which is pivoted a link 662; the other end of which is pivoted to the core 663 of the solenoid 622.

Located adjacent to the lower end of the member 641 is a pair of cooperating contacts 664 and 665. Located adjacent to the end of member 642 is a pair of cooperating contacts 666 and 667 and located adjacent to the end of the member 643 is a pair of cooperating contacts 668 and 669. These contacts may be suitably mounted on but insulated from the frame 623. The contacts 665, 667 and 669 are connected by a conductor 671 through a switch 672 to one terminal of a battery 578, the contacts 664, 666, and 668
15 are connected by conductors 672, 673 and 674 to the contacts 568, 571 and 573 respectively.

In the transmitter shown in Fig. 6 the conductors 675 and 676 of the keying circuit are connected through a switch 677 to two contacts 678 and 679 respectively. These contacts are located adjacent to a commutator 681 mounted on the shaft 682 of a clockwork mechanism 683. This mechanism is wound by means of the square pin 684 and is started and stopped by means of a lever 686. In the particular embodiment shown, the commutator 681 is made of insulating material and is provided with two conducting segments 687 and 688 spaced 105° apart. In Figs. 7 and 8 are shown two other forms of commutator 691 and 692; the commutator 691 being provided with three segments of conducting material 693, 694, which are 45° apart, and 695 which is 60° apart from 694, and the commutator 692 being provided with two segments of conducting material 696 and 697 spaced 45° apart.

For the particular angles chosen above, the commutator 695 at the receiver revolves 1.7 times as fast as commutators 681, 691 or 692.

In the operation of this invention if it is desired to pick-up an opera program when the same is broadcast from a station the key 548 marked Opera is depressed, the cone 553 then pushes the plate 563 to the left (Fig. 1) until it passes through the opening 566. When the plate 563 is moved to the left it releases any one of the keys which had previously been depressed. The depression of the key 548 causes the contacts 571 and 572 to contact with each other. The switch 521 is then closed thus starting the motor 516 which causes the shaft 513 to be slowly rotated, thus rotating the plates of the tuning condensers. In this way the receiver 510 is being successively tuned to all the various broadcast stations. Just before the operatic program is put on at any given broadcast station the commutator 681 which is marked Opera is placed on the shaft 682 and is secured thereto. The lever 686 is then moved so as to start the clockwork mechanism going thus rotating this disk at a predetermined speed. As this disk rotates the segment 687 will engage the contacts 678 and 679 thereby closing the keying circuit of the transmitter which sends out a short signal on its broadcast wave length.

After the commutator 681 has rotated a certain additional amount the segment 688 will engage the contacts 678 and 679 and another short signal will be sent out. In this way two short signals at a given interval apart are continually sent out for a pre-determined length of time before the broadcast of the opera starts.

These signals are picked up by the antenna 511 and passed into the receiver 510. As the plates of the tuning condensers of this receiver slowly rotate there will come a time when the receiver 75

will be tuned to the wave length of the broadcast station. At this time the signals will be amplified by the receiver 510 and fed over the output circuit over the conductor 535, contacts 532 and 539, through the primary of the transformer 541 and back over the conductor 538. The current in the secondary of the transformer 541 will be rectified by the rectifier 583 and this rectified current will energize the magnet 586.

The first of the two short signals to be received would then cause the armature 591 to be lifted out of engagement with the tooth 592 thus allowing the ratchet 593 to start rotating in a clockwise direction, thus causing the commutator 595 to be rotated in the same direction and as soon as the short impulse ceases the magnet 596 will become de-energized thus allowing the armature 591 to drop down under the action of gravity. The conducting segment 596 will then pass under the brushes 597 and 598 and as the contacts 607 and 608 are not engaged by the armature 591 no circuit will be closed. When, however, the segment 596 passes under the contacts 601 and 602 the segment 688 on the transmitting commutator 681 will be under contacts 678 and 679 so that a short signal will be transmitted at this time. This will be received and amplified by the receiver 510 thus energizing the magnet 586 in the manner previously described which will lift the armature 591 thus closing a circuit from the battery 612 through switch 611, conductor 609, contact 607, armature 591, contact 608 to contact 601, segment 596, contact 602, conductor 617, magnet 615, and back along conductor 613 to the battery 612. This will energize the magnet 615 which attracts the armature 627 thus rotating the plate 632 to the position shown in dotted lines in Figs. 3 and 4.

As the commutator 595 continues to rotate the segment 596 will pass under the contacts 603 and 604, thus closing a circuit through the solenoid 622 which causes the core 663 to be moved downwardly thereby rotating the arm 661 and the shaft 659 in a clockwise direction as seen in Figs. 2 to 5. This causes a similar rotation of the six arms 658. These arms pushing down on the collars 654 will press the springs 656 against the collars 655. This in turn will tend to move the three members 641, 642 and 643 downwardly. The member 641 cannot move, however, as the tooth 644 engages the plate 631. The member 643 cannot move as the tooth 651 engages the plate 631. The member 642, however, is free to move as neither of the teeth 646 or 647 will engage the plate 631 or 632. As this member is moved downwardly the spring 657 will be compressed, this spring being weaker than the spring 656. At the same time the end of the member 642 will cause the contact 666 to engage the contact 667, thus closing a circuit from the battery 578 through switch 572, conductor 671, contacts 667, 666, conductor 673, contacts 571 and 572, conductor 575, relay 576 and conductor 577 back to the battery 578, thus energizing the relay 576, thus moving the armature 579 to the right. This releases the L-shaped member 527 which is rotated in a clockwise direction by the action of the spring 528. This motion allows the contact 523 to be disengaged from the contact 526 thus breaking the circuit of the motor 516 which is brought to a stop thus leaving the receiving set 510 tuned to receive the opera broadcast.

At the same time the piece of insulation 531 disengages the contact 532 from the contact 539,

thus breaking the circuit to the relay 586 and causing the other arm of the contact 532 to engage the contact 534, thus closing the circuit to the loudspeaker 537 which gives out the opera which is being played at the transmitting station. As the commutator 595 continues to rotate the segment 596 will move under the contacts 605 and 606 thus energizing the solenoid 621. This will cause the bar 633 to be moved downwards and the tooth 635 will engage the armature 627 thus rotating it in a clockwise direction to the position shown in Fig. 2, the armature 626 being already in this position.

The commutator 595 will then continue to rotate until the tooth 592 engages the armature 591 which will then hold the commutator in the position shown in Fig. 1. When the commutator is in this position the circuits to the magnets 614, 615 and the solenoids 621 and 622 will be broken and all the parts will be returned to the positions shown in Figs. 1 to 5, under the action of the various springs associated therewith.

It is thus seen that when the proper sequence of signals are sent out by the transmitter they will be received by the receiver and cause the selector mechanism to operate if it has been previously set for this program by depressing the proper key.

If it is desired to have dance music for example, the key 547 is depressed thus causing the cone 552 to be pushed through the hole 565. This will cause the plate 563 to be moved to the left thus releasing the key 548 which will be moved up to its normal position under the action of the spring 558.

This will also cause the member 527 to be rotated in a counter clockwise direction until the armature 579 is moved in a like direction under the action of spring 581 thus locating the member 527 in the position shown in Fig. 1. As the key 547 is further depressed the cone 552 will pass entirely through the hole 565 thus allowing the plate 563 to be moved to the right under the action of the spring 564. When the member 527 was moved to the position shown the piece of insulation 531 was moved to the left thus causing the contact 532 to be disengaged from the contact 534 and causing the other arm of the contact 532 to engage the contact 539. In this way the circuit to the loudspeaker 537 is broken and the circuit to the relay 586 is closed. At the same time the contact 523 is caused to engage the contact 526, thus starting the motor 516 which will cause the shaft 516 to be slowly rotated as already described.

Just before the broadcasting of the dance program the commutator 681 is removed from the shaft 682 and is replaced by the commutator 691. The mechanism 683 is then started thus causing the commutator 691 to be rotated in a clockwise direction. This will cause three short signals to be sent out in succession and at predetermined intervals by the transmitter. These signals will be picked up by receiver causing the relay 586 to be operated three times at predetermined intervals. The first time it operates it will release the ratchet wheel 593, thus allowing the commutator 595 to make a complete revolution at a predetermined speed. As the segment 596 moves under the contacts 597 and 598, the second impulse will be received thus moving the armature 591 and causing energization of the magnet 614 which will throw the plate 631 to the left as shown in dotted lines in Fig. 3. When the segment 596 gets under the contacts 601 and

602 the third impulse will be received thus moving the armature 591 upwardly and closing the circuit through the magnet 615 thus causing the plate 632 to be moved to the left as shown by dotted lines in Fig. 3. When the segment 596 moves under the contacts 603 and 604 the solenoid 622 will be energized but this time only the member 641 will be allowed to move down as the two teeth 644 and 645 are freed from the plates 631 and 632. The tooth 646 of the member 642 will engage the plate 631 thus preventing this member from being moved and the tooth 652 of the member 643 will engage the plate 632 thus preventing this member from being moved. As the member 641 is moved down it will close the circuit through the relay 576 in a manner similar to that already described thereby stopping the rotation of the motor 516 and causing the receiver 510 to stay in the position in which it is tuned to the dance program.

In a similar manner if the sports program is desired the key 549 will be depressed and the commutator 692 will be placed on the shaft 682 at the transmitter thus transmitting two short impulses in close succession. This will cause the operation of the member 643, thus stopping the rotation of shaft 513 in a proper position to pick-up the sports program.

If it is desired to reset mechanism without setting for any particular program the reset key 546 is depressed thus causing the cone 551 to pass through the opening 554, thus moving the plate 593 to the left and releasing any of the other keys which may be depressed. At the same time it moves the member 627 into the position shown in Fig. 1. The motor 516 may then be stopped by opening the switch 521. The key 546 will not stay down due to the cylindrical portion 555 preventing it from catching in the plate 563.

It will be evident to those skilled in the art that many variations may be made in the details of the structure and that the invention is capable of other embodiments beside the one illustrated; therefore, it is not intended that the patent be limited except as necessitated by the prior art and indicated by the claims.

I claim:

1. The method of program selection in radio broadcasting and the like which comprises assigning to each particular type of program, as for example, opera, dance music, sporting events, etc., to be transmitted from various stations, identifying signals, transmitting the particular identifying signals corresponding to the type of program to be transmitted from the various stations prior to the transmission of the various programs therefrom, and utilizing the transmitted identifying signals at the receiver for rendering the receiver responsive to a broadcasting station transmitting the desired program.

2. The method of program selection in radio broadcasting and the like which comprises assigning to each particular type of broadcast, as for example, opera, dance music, sporting events, etc. to be transmitted from various stations identifying signals, transmitting the particular identifying signals corresponding to the type of program to be transmitted from the various stations at the respective wave lengths assigned to these various stations prior to the transmission of the various programs, and utilizing the transmitted identifying signals at the receiver for rendering the receiver responsive to the wave length of a

broadcasting station transmitting the desired program.

3. The method of station selection in radio broadcasting and the like which comprises assigning to each particular type of broadcast as for example opera, dance music, sporting events, etc. to be transmitted from various stations, a particular signal code, transmitting the signal code corresponding to the type of broadcast to be transmitted from each station prior to the transmission of the broadcast and at the receiving end selecting the particular type of broadcast desired by receiving the signal codes transmitted by the various stations and tuning the receiver to the wave length of the broadcasting station sending out a signal code corresponding to the particular type of broadcast desired.

4. The method of program selection in radio broadcasting and the like which comprises, assigning an identifying signal code to each particular type of program likely to be transmitted from various stations, transmitting at stated intervals the identifying signals from the stations corresponding to the type of program to be transmitted therefrom and utilizing the transmitted identifying signals at the reception end for rendering the receiver responsive to a broadcasting station transmitting the desired program.

5. The method of station selection in radio broadcasting and the like wherein the various stations transmit a signal code identifying the particular type of program to be transmitted therefrom, which comprises, automatically and continuously tuning the receiver along the band of broadcasting frequencies which includes the frequencies assigned to the various stations, setting the receiver so as to be operatively responsive to the identifying signal of the particular type of program desired and utilizing the reception of this signal when the receiver is tuned to a broadcasting station broadcasting the desired program for maintaining the receiver tuned to said station.

6. In a system of broadcasting wherein the various programs likely to be broadcast are grouped in classes and each class assigned an identifying characteristic, preferably a code signal to be broadcast by the transmitter prior to broadcasting the indicated program at the same wave length as that at which the program is to be broadcast, a receiver including means adapted to be set so as to become operative upon receipt of the signal code corresponding to the particular class of program desired and means when said last named means becomes operative for rendering said receiver responsive to a transmitting station broadcasting the desired program.

7. In a system of broadcasting wherein various programs likely to be broadcast over a plurality of transmitting stations are grouped in classes and each class assigned an identifying characteristic in the form of a signal code, means at the transmitter stations for broadcasting the code signal corresponding to the program to be broadcast thereby prior to broadcasting the indicated program from each of said transmitting stations in combination with a receiver including means for utilizing the transmitted identifying signals for rendering the receiver operative to receive signals from a sending station transmitting the signal code representative of the desired program.

8. In a system of broadcasting wherein various programs likely to be broadcast from a plurality of broadcasting stations are grouped in classes and each class assigned thereto an identifying

characteristic in the form of a signal code, means at each of said broadcasting stations for transmitting the particular identifying signal code corresponding to the program to be transmitted at a predetermined wave length, a receiver adapted to be made responsive to said broadcasting stations including settable mechanism adapted to be set so as to become operative upon receipt of a signal code corresponding to the particular class of program desired, means operative when said mechanism is set for automatically rendering the receiver successively responsive to the energy transmitted by the various stations identified above and means operative when the receiver becomes responsive to the particular signal code to which said mechanism is set for rendering said second named means inoperative, whereby the receiver is rendered responsive to a broadcasting station broadcasting the desired program.

9. The system as described in the next preceding claim which includes in combination therewith a translating device and means for rendering said translating device inoperative until the receiver has become responsive to a broadcasting station transmitting the type of program desired.

10. The method of program selection in radio communication and the like which comprises assigning to any particular type of program broadcast from a broadcasting station an identifying signal, transmitting the particular identifying signal corresponding to that type of program just prior to the transmission of the program, intercepting the transmitted energy at a receiving point and utilizing the transmitted program identifying signal at the receiving point to condition a receiver so as to receive from said station the particular program corresponding to the program identification signals.

11. In a system of broadcasting wherein any particular type of program is assigned an identifying code signal which is to be broadcast by a transmitter prior to broadcasting the indicated program, a receiver including means adapted to be set so as to become operative upon receipt of the signal code corresponding to the particular type of program desired and means acting upon operation of said last named means for conditioning the receiver so as to render the desired program intelligible.

12. In combination with receiving apparatus provided with a variable tuning instrumentality adapted to be continuously varied from one end of a broadcasting spectrum to another for tuning the receiving apparatus to any frequency within said spectrum, a motor for operating said tuning instrumentality, settable mechanism associated with the receiver and adapted to be set so as to become operative upon receipt of a predetermined signal code, an operable key element operable to set said mechanism, means operable upon operation of the key to set said mechanism for initiating the operation of said motor to operate the tuning instrumentality and means upon receipt of the predetermined signal code for rendering the settable means operative to stop operation of the motor.

13. In a system of broadcasting wherein each particular class of programs is assigned an identifying code signal which is to be broadcast by a transmitter prior to the broadcast of the indicated program therefrom, a receiver provided with a reproducing device, settable mechanism connected with said receiver and adapted to be set so as to become responsive to any one of the signal codes, a plurality of keys each one

thereof being respectively representative of one particular class of program, means connecting said keys and said settable mechanism whereby operation of any one of the keys sets the settable mechanism so that the latter becomes operative upon receipt of the particular signal code represented by the particular key operated, means controlled by the operation of one of said keys to set said mechanism to become responsive to a desired class of program, for effectively disconnecting the reproducer from the receiver, and means controlled by said settable mechanism upon receipt of a signal code representing the particular class of program set for, for effectively reconnecting said reproducer to the receiver.

14. In combination with broadcast transmitting apparatus, an auxiliary signalling device, means for connecting said auxiliary device to the transmitting apparatus for impressing auxiliary signals upon the transmitting apparatus, said auxiliary signalling device being provided with a plurality of operable keys for determining the character of the signals transmitted by the auxiliary signalling means, and means for interchangeably connecting any of said keys to the auxiliary signalling device whereby signals may be transmitted from the auxiliary signalling device to the transmitting apparatus having different characteristics.

15. In combination with a broadcast transmission system of the type wherein auxiliary signals are transmitted from the transmitter and utilized at a receiving point to affect the operation of the receiver, an auxiliary signal generating device, means for connecting said generating device to the transmission apparatus for impressing the auxiliary signals upon the transmission apparatus, said auxiliary signal generating device being provided with a plurality of connectible elements for determining the character of the signals generated by the auxiliary signal generating device, and means for interchangeably connecting any of said elements to the auxiliary signalling device whereby signals having different characteristics may be transmitted from the auxiliary signalling device to the transmitting apparatus.

16. In combination with a broadcast transmission system of the type wherein auxiliary signals may be transmitted from the transmitter in addition to the usual signal transmission, said auxiliary signals being utilized at a receiving point to control the operation of the receiver, an auxiliary signal generating device, means for connecting said generating device to the transmission apparatus so as to thereby impress the auxiliary signals upon the transmission apparatus, said auxiliary generating device being provided with a plurality of connectible rotatable commutator elements each thereof having conducting segments positioned so as to determine the character of the signals generated by the auxiliary signal generating device, commutator driving means and contact means for electrically connecting the commutator segments to the auxiliary signal generating device.

17. The method of program selection in radio communication and related arts which comprises transmitting a series of independent signals each independently characterizing separate individual programs, continuously varying the tuning of a receiver within a frequency spectrum which includes the stations desired to be received and fixing the tuning of the receiver to receive

the desired broadcast at any point of the frequency spectrum at which an identifying signal corresponding to the type of program desired is received.

18. In a system of communication wherein each class of programs to be transmitted is assigned an identifying signal which is broadcast by a transmitter to classify the program transmission therefrom, the method of program selection which comprises continuously varying the tuning of a receiver within a frequency spectrum which includes the frequencies at which the transmitting stations desired to be received broadcast, and fixing the tuning of the receiver at approximately the point of reception of the identifying signal corresponding to the type of program desired.

19. In a system of broadcasting wherein each class of programs is assigned a particular identifying signal, which signal is broadcast by a transmitter to classify the program transmission therefrom, a receiver including settable means adapted to be set so as to become operative upon receipt of an identifying signal corresponding to the particular class of program desired to be received, means connected with the settable means and operable upon setting the settable means for continuously tuning the receiver over a band of frequencies which includes the stations desired to be received, and means acting upon operation of the settable means by receipt of the particular identifying signal for fixing the tuning of the receiver so as to remain tuned to the station transmitting the received identifying signal.

20. In a system of broadcasting wherein each class of programs is assigned a particular identifying signal this signal being broadcast by a transmitter to classify the program transmissions therefrom, a receiver including a plurality of settable means adapted to be set so as to become operative upon receipt of an identifying signal corresponding to the particular class of program desired to be received, means connected with the settable means and operable upon setting the settable means for continuously tuning the receiver over a band of frequencies which includes the frequencies of the stations desired to be received, means acting upon operation of the settable means by receipt of the particular identifying signal for fixing the tuning of the receiver so as to remain tuned to the station transmitting the received identifying signal and means acting upon operation of said last named means for conditioning the receiver so as to render the desired program intelligible.

21. In a system of broadcasting wherein various receiver controlling signals are transmitted as an auxiliary signal by various broadcast stations broadcasting at different frequencies lying within a predetermined frequency spectrum, a receiver including means adapted to be set so as to become operative upon receipt of the controlling signal corresponding to the desired broadcast and means acting upon operation of said last named

means for conditioning the receiver so as to render the desired broadcast intelligible.

22. In a system of broadcasting wherein various receiver controlling signals are transmitted as an auxiliary signal by various broadcast stations broadcasting at different frequencies lying within a predetermined frequency spectrum, the method of broadcast selection which comprises varying the tuning of the receiver within the frequency spectrum and maintaining the tuning of the receiver constant at that point of the frequency spectrum at which the controlling signal corresponding to the desired broadcast is received.

23. In a system of broadcasting wherein various receiver controlling signals are transmitted as an auxiliary signal by various broadcast stations each thereof broadcasting at different frequencies lying within a predetermined band of frequencies, a receiver provided with a reproducing device, settable mechanism connected with the receiver and arranged so as to be set to become responsive to any one of the various receiver controlling signals, a plurality of keys each one thereof being respectively representative of one of the particular controlling signals, means connecting said keys and said settable mechanism whereby operation of any one of the keys acts to set the settable mechanism so that the latter becomes operative upon receipt of the particular receiver controlling signal represented by the particular key operated, means acting upon operation of one of said keys to set said mechanism to become responsive to a desired receiver controlling signal, for effectively disconnecting the reproducer from the receiver, and means controlled by said settable mechanism upon receipt of the controlling signal for which the mechanism has been set for effectively reconnecting the reproducer to the receiver.

24. In a signal broadcasting system wherein various program broadcasts are classified as to type and each class assigned an identifying code signal, the code signals being transmitted by a broadcast station as an auxiliary signal to indicate each class of program transmission, a receiver including means settable so as to become operative upon receipt of the signal code corresponding to the particular class of program desired and means acting upon operation of the settable means for conditioning the receiver so as to render the desired program intelligible.

25. In a system of broadcasting wherein various receiver controlling signals are transmitted as an auxiliary signal by various broadcast stations broadcasting at different frequencies lying within a predetermined frequency spectrum, the method of broadcast selection which comprises varying the tuning of the receiver within said frequency spectrum and fixing the tuning of the receiver to receive the desired broadcast at that point of the frequency spectrum at which the controlling signal corresponding to the desired broadcast is received.

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