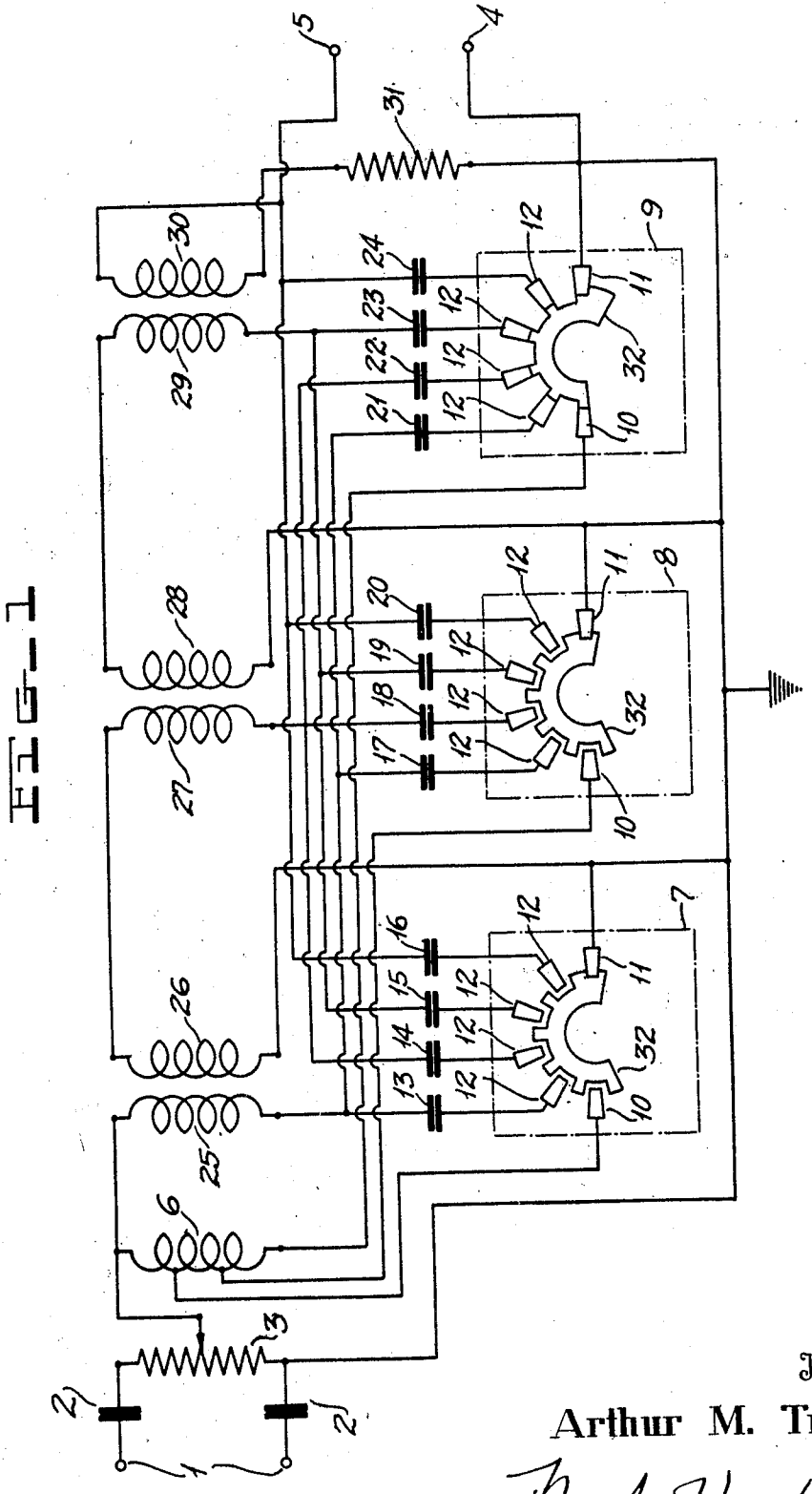
Dec. 25, 1934. A. M. TROGNER 1,985,303

SELECTIVE FILTER SYSTEM

Original Filed May 26, 1931 2 Sheets-Sheet 1



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FIG. 2

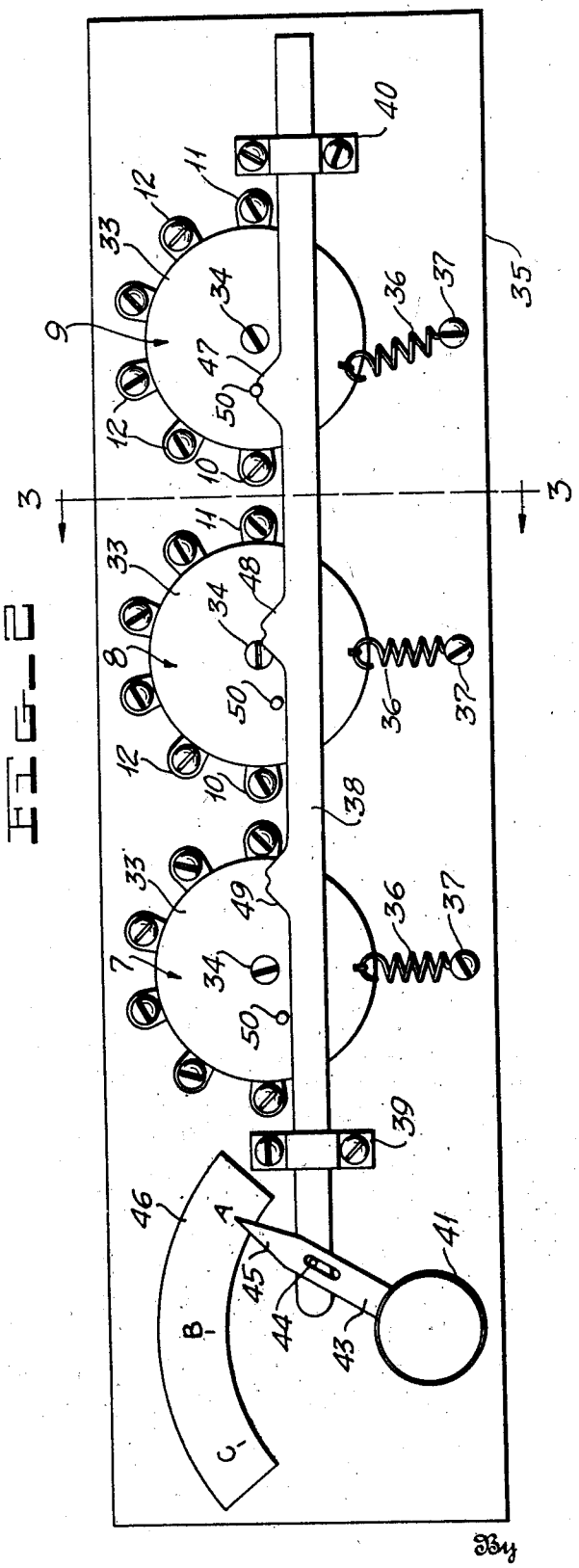
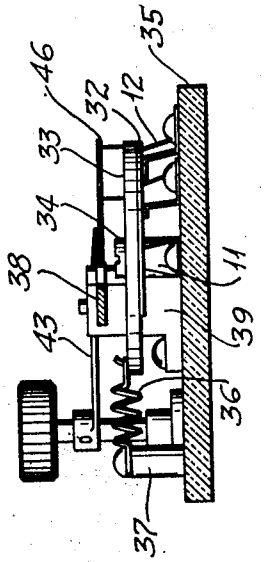


FIG. 3



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SELECTIVE FILTER SYSTEM

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Original application May 26, 1931, Serial No. 540,035. Patent No. 1,894,645, dated January 17, 1933. Divided and this application April 14, 1932, Serial No. 605,171

6 Claims. (Cl. 200—5)

This is a division of my application Serial Number 540,035, filed May 26, 1931, entitled "Selective filter system," now Patent No. 1,894,645, issued January 17, 1933, and specifically relates to a switching arrangement for rendering a filter system selectively responsive to predetermined frequency bands.

In the co-pending application of Robert D. Duncan, Jr., Serial Number 495,823, filed November 15, 1930, there is disclosed a type of filter system which can be made selectively responsive to different bands of frequencies by a switching mechanism which selects related values of circuit constants. The switching system disclosed in this co-pending application comprises a series of switches each of which is adapted to connect to any one of several predetermined values of constants of any single mesh of the series of meshes comprising the filter system. Such an arrangement necessitates the movement of all switches to make the filter system responsive to a different frequency band.

One of the objects of my invention consists in providing a selective filter system in which it is necessary to move but one switch to change the constants of a series of meshes in a filter.

Another object consists in providing a selective filter system having a series of switches each of which connects to related values of circuit constants in a multiplicity of filter meshes.

A further object comprises producing a selective filter system having simple mechanical means for controlling the circuit constants of an electrical circuit.

I accomplish the above desirable objects in a novel selective filter system employing a series of rotatable switches under control of a reciprocative member.

In the drawings which accompany and form a part of this specification and in which like reference characters designate corresponding parts throughout:

Fig. 1 is a diagrammatic representation of the selective filter system of my invention;

Fig. 2 is a top plan view of the switching mechanism employed in my system; and

Fig. 3 is a transverse sectional view along the line 3—3 of Fig. 2.

Referring to the drawings in detail, and particularly to Fig. 1, input terminals 1 are connected through coupling condensers 2 to a potentiometer resistance 3. The potentiometer resistance 3 is connected to an output terminal 4 and has an adjustable connection to an auto-transformer 6. A plurality of switches 7, 8, and 9 are provided with contacts 10, 11, and 12 as shown. Contacts 10 are connected to different values of the inductance comprising auto-transformer 6. Contacts 11 are commonly connected to ground and to the output terminal 4. Contacts 12 in switch 7 are respectively connected to capacitances 13, 14, 15, and 16 which form a related group of capacitance values. Contacts 12 of switch 8 are respectively connected to capacitances 17, 18, 19, and 20 which form a related group of capacitance values, and contacts 12 of switch 9 are respectively connected to capacitances 21, 22, 23, and 24 which form another related group of capacitance values.

An inductance 25, connected to the auto-transformer 6 and electromagnetically coupled to an inductance 26, is connected to capacitances 13, 17, and 21. An inductance 27, connected to inductance 26 and electromagnetically coupled to inductance 28, is connected to the capacitances 14, 18, and 22. An inductance 29, connected to inductance 28 and electromagnetically coupled to inductance 30, is connected to capacitances 15, 19, and 23. One side of the inductance 30 is connected to the capacitances 16, 20, and 24, while the other side of the inductance 30 is connected through a terminating impedance 31 to contacts 11 of the switches 7, 8, and 9. The inductances 26 and 28 also have connections, as shown, to ground.

The inductance 25 forms a resonant circuit on combination with any one of the capacitances 13, 17, or 21. The inductances 27 and 26, in combination with any one of the capacitances 14, 18, or 22, form another resonant circuit, while the inductances 28 and 29 in combination with any one of the inductances 15, 19, or 23 form another resonant circuit. The capacitances 16, 20, and 24 provide different values of capacitances effective in combination with the inductance 30 and terminating impedance 31. This chain of resonant circuits, having the properly terminated impedance 31, forms a filter system which is responsive to any one of a plurality of predetermined frequency bands depending upon the values of capacitances selected.

The switches 7, 8, and 9 are provided with rotor contacts 32 for making connection with the contacts 10, 11, and 12. According to my invention any one of the rotor contacts 32 can be moved for rendering the filter system, as a whole, selectively responsive to a predetermined band of frequencies.

Fig. 2 is a view of the mechanical construction of the switching arrangement of my selective

filter system. Referring to Figs. 2 and 3, the rotor contacts 32 are mounted upon rotatable insulating members 33 mounted upon pivots 34. The pivots 34 are secured to an insulating base member 35. The contacts 10, 11, and 12 are mounted upon the base member 35 for engagement with the rotor contacts 32.

Tension springs 36 are provided between the rotatable members 33 and pillars 37 for normally holding the rotatable members 32 in a position such that the rotor contacts are out of engagement with the contacts 10, 11, and 12. A bar 38 is reciprocatively mounted in two bearing members 39 and 40 in a position above the rotatable members 33. A knob 41 rotatably mounted in bearing member 42 is provided with an arm 43 which has a slot therein for engagement with a pin 44 mounted in the bar 38. The arm 43 terminates in a pointer 45 for indicating the position of the bar 38 with reference to designations "A", "B", and "C" on an index sector 46.

The bar 38 is provided with projecting portions 47, 48, and 49 for engagement with pins 50 mounted in the rotatable members 33 of switches 9, 8, and 7. The projections 47, 48, and 49 are so situated along the bar 38 that longitudinal movement of the bar 38 will cause sequential engagement of the projections 47, 48, and 49, with the pins 50 of the switches 7, 8, and 9. That is, when the knob 41 is moved to a position such that the pointer 45 is opposite the designation "A", the projecting portions 47 will be moved into engagement with pin 50 of switch 9 so that the rotatable member 33 is rotated to cause the rotor contact 32 thereof to engage with the contacts 10, 11, and 12. Movement of the pointer 45 to the designation "B" will cause the projecting portion 48 to engage pin 50 of switch 8 thereby moving rotatable member 33 to cause the rotor contact 32 mounted thereon to engage with contacts 10, 11, and 12. At the same time, the projecting portion 47 will be moved out of engagement with pin 50 thereby permitting tension spring 36 to return the rotatable member 33 of switch 9 to a normal position wherein the rotor contact 32 is out of engagement with the contacts 10, 11, and 12. The pointer 45 can be further moved to designation "C" whereby the projection 49 will engage with pin 50 to cause rotatable member 33 of switch 7 to move the contact sector into engagement with the contacts 10, 11, and 12. Movement of the pointer 45 in a reverse direction will cause the switches 7, 8, and 9 to be actuated one at a time in reverse order. Each of the switches 7, 8, and 9 is adapted to respectively control the groups of circuit constants of the filter system cooperating to make the filter system responsive to a predetermined band of frequencies. The bar 38 is adapted to sequentially operate these switches by reciprocative motion.

It will be evident that the selective filter system of my invention provides an efficient and practical method of switching which is very adaptable to manufacturing purposes such as in the construction of wired radio receivers employing selective filter systems coupled to power lines carrying program modulated high frequency energy at a plurality of different carrier frequencies. Although I have shown a preferred embodiment of my invention, I do not wish to be limited thereto except insofar as may be pointed out in the appended claims.

What I claim as new and original and desire to secure by Letters Patent of the United States is:

1. The combination of an electrical organization, a plurality of switches for controlling said electrical organization, said switches each comprising a plurality of individual contacts and a single contact common to said individual contacts, a reciprocative bar member having projections thereon for sequentially engaging with said single contacts to impart rotary motion thereto and angularly movable means for longitudinally moving said bar member to rotate said single contacts to simultaneously engage all of the individual contacts of each of said switches in a predetermined sequence.

2. The combination of an electrical organization, a plurality of switches for controlling said organization, each of said switches comprising a plurality of individual contacts having a single contact common to said individual contacts, a reciprocative bar having means thereon for sequentially engaging with said single contacts to impart rotary motion thereto, and means for longitudinally moving said bar to rotate said single contacts to simultaneously engage all of the individual contacts of each of said switches in a predetermined sequence.

3. The combination of an electrical organization, a plurality of switches for controlling said electrical organization, said switches each comprising a plurality of radially disposed individual contacts and a single rotatable contact therefor, a reciprocative bar member having projections thereon for sequentially engaging with said single contacts to impart rotary motion thereto and angularly movable means for longitudinally moving said bar to rotate said single contacts to simultaneously engage all of the individual contacts of each of said switches in a predetermined sequence.

4. The combination of an electrical organization, a plurality of switches for controlling said organization, said switches each comprising a plurality of radially disposed individual contacts and a single rotatable contact therefor, a reciprocative bar having means thereon for sequentially engaging with said single contacts to impart rotary motion thereto and means for longitudinally moving said bar to rotate said single contacts to simultaneously engage all of the individual contacts of each of said switches in a predetermined sequence.

5. The combination of an electrical organization, a plurality of switches controlling said electrical organization, each of said switches comprising a plurality of individual contacts and a single contact common to said individual contacts, and means for operating said single contacts sequentially to simultaneously engage all of the individual contacts in each of said switches in a predetermined sequence.

6. The combination of an electrical organization, a plurality of switches for controlling said organization, each of said switches comprising a plurality of radially disposed individual contacts and a single rotatable contact therefor and means for rotating said single contacts sequentially to simultaneously engage all of the individual contacts of each of said switches in a predetermined sequence.

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