

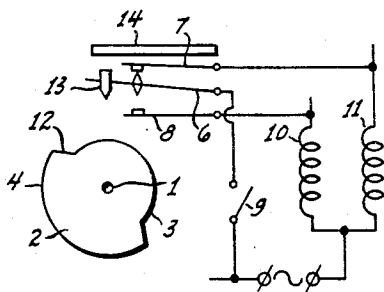
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J. KUPERUS

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AUTOMATIC TUNING ARRANGEMENT

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INVENTOR
JAN KUPERUS
BY *H. G. Brown*
ATTORNEY

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AUTOMATIC TUNING ARRANGEMENT

Jan Kuperus, Eindhoven, Netherlands, assignor,
by mesne assignments, to Radio Corporation
of America, New York, N. Y., a corporation of
Delaware

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The invention relates to a radio receiving apparatus adapted to be automatically tuned to a number of predetermined stations by means of a station selector consisting of a keyboard, a selector disc or a similar device.

Radio receiving apparatus with automatic tuning are already known in which the spindle of the tuning condensers has mounted on it a plurality of profiled discs which each corresponds to one of the stations to which the receiver can be automatically tuned. In such arrangements the tuning means are usually coupled to a motor driven shaft in any suitable manner and a plurality of station discs are mounted on the shaft. The circumference of each disc consists of two arcs with different radii, the centers of which are located in the axis of the shaft. Usually, a feeler is provided and arranged to move over the circumference of each disc. The feeler cooperates with two contact elements located on either side thereof. If the feeler is in contact with one portion of the circumference of the disc, it engages one of the contact elements with the result that the driving motor is energized for operation in one direction. If, on the other hand, the feeler is in contact with the other portion of the circumference of the disc it engages the other contact element and thereby causes the motor to be operated in the opposite direction.

The above described device has the drawback that due to the contact between the feelers and the discs there occurs a rather considerable friction. Besides, due to the movement over the circumference of the discs the feelers become rapidly worn, so that danger of incorrect tuning arises.

The object of the invention is to provide a radio receiving system with completely automatic tuning wherein, upon attainment of the desired tuning, the sense in which the tuning means are driven and the stopping of these means are determined, as in the above described device, by the position of a switch or of a plurality of switches but wherein the said drawbacks of the known device are avoided.

According to the invention, the switch or switches are operated for this purpose, for each of the predetermined stations, by the movement of a permanent magnet under the influence of the attraction of a profiled body which consists, at least partly, of magnetic material and which is moved, simultaneously with the tuning means, by the motor with respect to the magnet.

The invention is preferably carried into effect in such manner that under the influence of the

attraction of the magnetic portion of the profiled body on the one hand and under the influence of a retroactive force on the other hand the magnet follows the profile of the magnetic portion of the profiled body without coming into contact with the latter. The said retroactive force may be obtained, for example with the aid of a spring but it is preferably formed by the attractive force between the magnet and a body of magnetic material located opposite said magnet.

The invention will be explained more fully by referring to the single figure of the accompanying drawing which represents, by way of example, one embodiment thereof.

In the device shown in the drawing the contact tongue 6 has secured to it a permanent magnet 13 instead of a feeler. A disc 2 which is mounted on a spindle 1 by which the tuning means are actuated and whose circumference consists of two arcs 3 and 4 of different radii is wholly made of magnetic material so that the magnet 13 is attracted by the disc. Opposite the magnet is arranged a strip 14 of magnetic material which exerts a retroactive force on the magnet.

So long as the portion 3 of the circumference of the disc is opposite the magnet 13, the attractive force exerted on the magnet by the strip 14 exceeds the force exerted by the disc so that the magnet occupies the upper position and the contact tongue 6 is pressed against the contact tongue 7. If the switch 9 is closed, the field winding 11 of the motor is switched into circuit in this case with the result that the spindle 1 is driven in clockwise direction.

If, on the other hand, the magnet is located opposite the portion 4 of the circumference of the disc, the attractive force exerted by the disc exceeds the force exerted by the strip 14 with the result that the contact tongue 6 is pressed against the contact tongue 8 and, if the switch 9 is closed, the winding 10 is excited, the spindle 1 being driven in this case in the opposite sense. When the point 12 at which the radius of the circumference is abruptly altered, is opposite the magnet the attractive force of the disc is equal to that of the strip 14 with the result that the magnet occupies the intermediate position and the windings 10 and 11 are both switched out of circuit.

The invention is not limited to the described practical example and may be modified in many ways. Thus, it is not necessary that the whole of the disc 2 should consist of magnetic ma-

terial but it may also consist of a magnetic portion and a non-magnetic portion so that only part of the circumference of the disc exerts an attractive force on the magnet whereas the latter is not attracted by the remainder. If in this case the non-magnetic portion of the circumference of the disc is opposite the magnet, the latter is raised under the influence of the retroactive force. It is also possible to use, instead of a disc, any other profiled member which is movable in some way or other with respect to the magnet. The single requirement this member has to satisfy is that different portions of the surface of the member which is moved past the magnet should exert on the magnet different forces of attraction.

Furthermore, the retroactive force need not be exerted by a member of magnetic material; it may also be obtained in any other manner, for instance, by means of a spring.

I claim:

1. In a selector control mechanism, switching means movable between two extreme positions and arranged to close a first circuit when in one extreme position and to close a second circuit when in the other extreme position, said switching means when in a released condition being arranged to assume an intermediate position in which neither of said circuits is closed, means for applying a substantially constant force to said switching device which tends to bring the switching device into one of its extreme positions, rotatable magnetic means mounted in operative relationship to said switching means and rotatable with respect thereto, said rotatable means having a sector providing sufficient magnetic force to said switching device to overcome said constant force and bring the switching device into its other extreme position, a second

sector providing insufficient magnetic force to overcome said constant force and a third sector connecting said first two named sectors which varies the magnetic force gradually from a value insufficient to overcome said constant force at one of its ends to a value sufficient to overcome said constant force at the other of its ends, an intermediate part of said connecting sector providing a magnetic force which balances said constant force in which position of said rotatable means the switching device assumes its intermediate position.

2. In a selector mechanism, a rotatable control shaft, a cam disc at least a portion of which is composed of magnetic material, said disc being eccentrically mounted on said shaft, a body of magnetic material mounted substantially in the plane of said disc but spaced from the disc, a permanent magnet feeler mounted for movement in the space between the disc and said body, said disc being arranged with respect to said body so that for approximately one half of a complete cycle of operation thereof said permanent magnet is drawn toward it and for approximately the other half of a complete cycle of operation thereof the permanent magnet is drawn toward said body there being provided at least one position of said disc wherein the permanent magnet assumes a position of equilibrium between the disc and said body, and switching means adapted to be selectively operated in accordance with the operation of said permanent magnet so that one of said switching means is closed only when the permanent magnet is drawn to a position nearest the disc and the other switching means is closed when the permanent magnet is drawn to a position nearest said body.

JAN KUPERUS.