April 27, 1937. J. H. NADEN 2,078,637

RADIO TUNING DEVICE

Filed Nov. 1, 1934

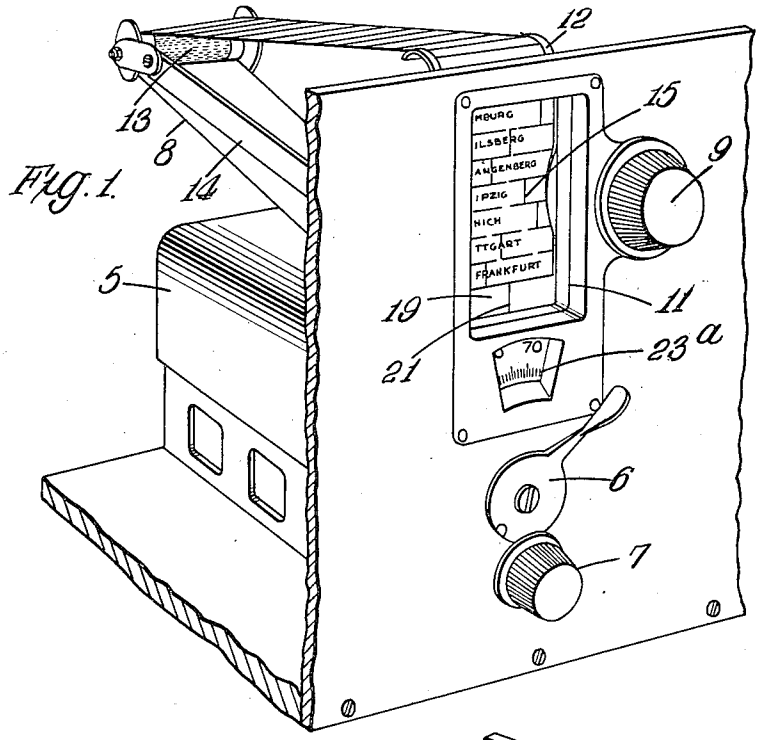

Fig. 1.

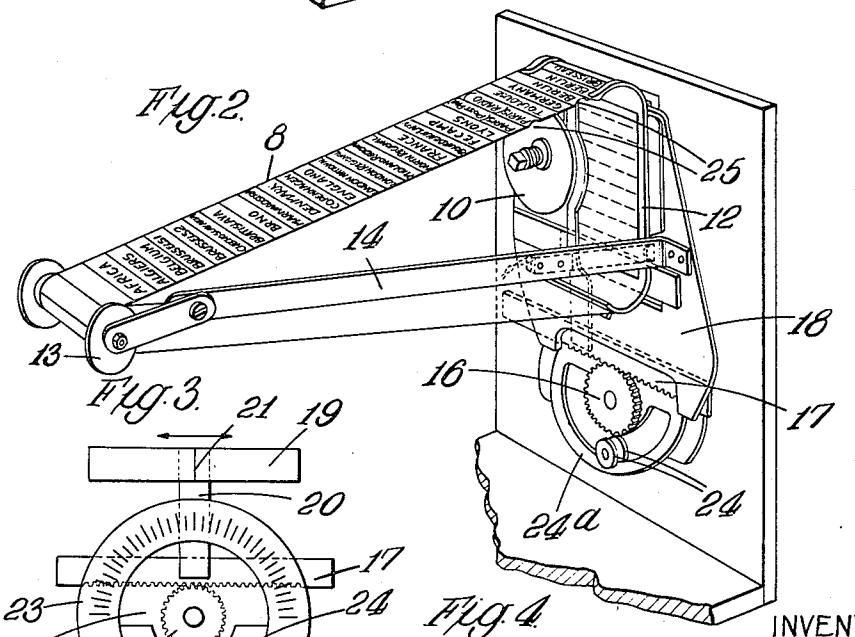

Fig. 2.

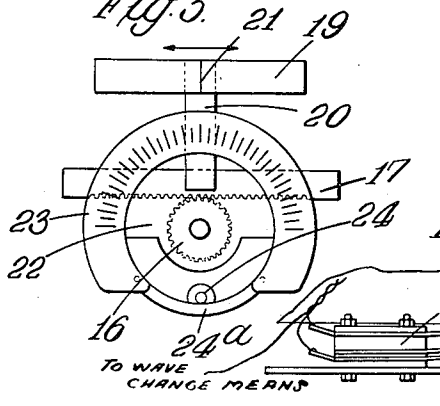

Fig. 3.

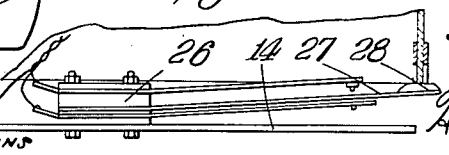

Fig. 4.

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RADIO TUNING DEVICE

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2 Claims. (Cl. 250—40)

This invention relates to station indicators or tuning devices for wireless receiving or transmitting apparatus. It is the chief object of the present invention to provide an improved device whereby the broadcasting station to which the apparatus is required to be tuned can be preselected without disturbing for example the previous or existing setting of the tuning device and after selection of the broadcasting station, the tuning device can be manipulated to set the apparatus for reception of the programme broadcast by the pre-selected station.

According to the present invention the broadcasting stations or certain of them are indicated on a station indicator which can be moved independently of the tuning device of the apparatus to bring one of the stations marked thereon into an appropriate position, a member being provided which is moved under the action of the tuning device of the apparatus in relation to the station indicator, the arrangement being such that when the member or a point or mark thereon coincides with another point on the station indicator the apparatus is tuned for the reception of the selected station. The station indicator preferably comprises an endless band which is divided transversely into sections, each section having one broadcasting station indicated by name thereon. The said member which is moved under the action of the tuning device is preferably arranged to move rectilinearly and transversely of the station indicator and is suitably geared with the tuning device. The station indicator or endless band in accordance with another feature of the invention is adapted to operate a switch or similar device for the purpose of automatically rendering the apparatus in condition for the reception of long wave or short wave stations, when a long or short wave broadcasting station is moved to the pre-selected position.

In order that the said invention may be clearly understood and readily carried into effect, the same will now be more fully described with reference to the accompanying drawing in which:—

Figure 1 is a front perspective view of the preferred form of the invention;

Figure 2 is a rear perspective view of Figure 1 with the tuning condenser omitted;

Figure 3 is an elevation of a detail, and

Figure 4 is a plan view of a wave change switch.

In the drawing the tuning condenser is indicated by the reference numeral 5 which is adapted to be rotated by a knob or lever 6 for rough adjustment and by a knob 7 for fine adjustment. The broadcasting stations are indicated on a station indicator 8 preferably comprising an endless band as shown, the indicator 8 being moved independently of the tuning condenser 5 by a knob 9 which is coupled to friction discs 10 (one of which is shown in Figure 2) and which engage an edge of the band. The endless band moves relatively to an aperture 11 through which the names of the broadcasting stations are visible, the endless band being maintained in proximity to the aperture 11 by a guiding frame 12 whilst the other portion of the band is supported on a roller 13 carried by a rearwardly projecting arm 14 or in any other suitable manner enabling the band to be moved from time to time. The names of the broadcasting stations in the example shown are marked in transverse sections and each section has a vertical line 15 (Figure 1), the positions of which are correlated to the settings of the condenser according to the wave lengths of the broadcasting stations marked on the band. The knob or lever 6 may be connected to the spindle of the condenser 5 and the said spindle carries a gear wheel 16 which meshes with a rack 17 mounted for rectilinear movement and transversely of the band 8 in suitable guideways in a frame 18 from which the component parts of the tuning device are carried. The rack 17 carries the aforesaid member which is moved under the action of the tuning device, said member being indicated by the reference numeral 19 and is supported on an arm 20 projecting upwardly from the rack 17. The arm 20 is preferably connected to the rack 17 through the medium of screws and slots for adjustment purposes. The member 19 has a vertical line 21 and when the line 21 on the member 19 coincides with one of the lines 15 the apparatus is tuned for the reception of the particular station. In Figure 1 of the drawing the station "Frankfurt" is immediately above the member 19 and when the member 19 is moved by rotating the lever 6 or the knob 7 to move the line 21 so that it coincides with the line 15, the apparatus is tuned to receive a broadcast from Frankfurt. The gear wheel 16 is attached to a plate 22 which carries a scale 23 preferably graduated in wave lengths, the scale 23 being visible through an aperture 23^a as shown in Figure 1. The plate 22 conveniently constitutes the member which cooperates with the knob 7 for a slow motion operation of the member 19 for fine adjustment, the knob 7 being associated with friction discs 24 operating in conjunction with an arcuate portion 24^a of the plate 22 as shown in Figure 3. The end-

less band 8 is preferably transparent or translucent to enable it to be illuminated from the rear or, alternatively, the band may be opaque and be illuminated from the front. If desired, instead of providing vertical lines 15 on the band 8, points on the band 8 may be inter-connected by inclined lines so that a chart or graph is provided on the band. The band 8 and the lines 15 or graph line may be calibrated in any suitable manner as for example by tuning a standard apparatus for the reception of a particular station, then marking the position where the line 21 on the member 19 is adjacent to one of the transverse lines dividing the band 8 into the several sections and so on with all the stations marked on the station indicator and then applying the vertical lines 15 or joining the points on the band to form the aforesaid chart or graph lines. It is preferred that certain sections of the band 8 be left blank so that the operator may mark on the said blank sections other stations. The broadcasting stations are preferably arranged in alphabetical order or otherwise suitably arranged so that the direction in which the station indicator is to be moved to pre-select a station can be readily ascertained.

The apparatus described is in accordance with another feature of the invention combined with a change-over switch or equivalent device for automatically placing the apparatus in a condition for the reception of long or short wave stations when a long or short-wave station is pre-selected. For this purpose the band 8 is adapted to operate a suitable switch or equivalent device which functions to connect in circuit certain windings of an aerial or tuning coil or otherwise places the apparatus in a condition for the reception of long or short wave stations as the case may be. In the example shown, the band 8 on one of its edges is provided against the long wave stations marked thereon, with semi-circular recesses 25 and adjacent to the edge of band 8 having the recesses 25, a switch device is disposed indicated generally by the reference numeral 26, which as shown, comprises a plurality of spring arms. One of the arms 27 has partially spherical shaped end 28 which can engage the edge of the band or the recesses 25, as the band is moved so that the switch is opened or closed as the case may be for the purpose aforesaid. The switch 26 can conveniently be carried by the arm 14 as shown in Figures 2 and 4. It will thus be appreciated that when the band 8 is moved and when a long or short wave station is in the appropriate position above the member 19 the apparatus is automatically rendered in a condition for the reception of a long or short wave station. If desired, the switch 26 may be arranged to operate a relay device which in turn functions in the manner aforesaid.

It will be appreciated that since the station indicator can be moved independently of the tuning device any station can be pre-selected according to requirements. For example, should the wireless apparatus be tuned for reception of a particular station it is possible to move the station indicator to pre-select a station to which the apparatus can be tuned to receive a programme at a particular time the reception at the station to which the apparatus was previously tuned not being disturbed on movement of the station indicator.

It will also be appreciated that the present invention considerably facilitates the tuning of the wireless apparatus since the apparatus is immediately set for reception of a particular station when the line on the transversely movable member 19 coincides with a line on the station indicator. It may be mentioned that instead of employing the member 19 any other suitable construction of "pointer" may be used.

It will be understood that when the band 8 is moved the reception may be interrupted as a result of operation of the switch 26. This however, is only intermittent and when, for example, a station is being received on a short wave length and it is desired to move the band 8 to a position for the reception of a long wave station it would, in these circumstances, be necessary to move the band so that the long wave station is visible through the aperture 11 but not directly above the member 19, in which event it would of course disturb the previous setting or reception of the station as a result of operation of the switch 26.

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

1. A wireless receiving apparatus adapted for long wave and short wave operation comprising, in combination, a tuning device, an indicating member comprising an endless band bearing transverse inscriptions which indicate a plurality of broadcasting stations and individually having an index mark associated with each, means for moving said indicating member independently of said tuning device in order to move each inscription into a predetermined position to aid in selecting a broadcasting station, a cooperating index member coupled to said tuning device so as to move therewith, a switch device adapted for connection to wave change means in order to control the same whereby said apparatus is operative for long wave or short wave operation, said switch device being mounted in proximity to said indicating member to contact therewith and shaped portions on said indicating member adjacent certain of the inscriptions marked thereon, said shaped portions cooperating with said switch device when said shaped portions are disposed opposite thereto to actuate said switch device, said index marks being disposed in predetermined space relations with respect to said cooperating index member so that when said index member coincides with the index mark which is associated with a desired inscription disposed in said predetermined position, the tuning device is in a condition for reception of signals from the selected broadcasting station indicated upon said desired inscription.

2. A station indicator for wireless receiving or transmitting apparatus adapted to be coupled to a tuning device for long wave or short wave operations, comprising in combination, an endless band having a plurality of transverse sections thereon, each section bearing an inscription indicative of a broadcasting station, each section having an index mark thereon, means for moving said endless band independently of said tuning device, in order to move each transverse section into a predetermined position to select a broadcasting station, a cooperating index member movable transversely of said endless band and independently thereof, means for coupling said cooperating index member to the tuning device so as to move said cooperating index member with said device, a switch device in engagement with said endless band and adapted to switch said apparatus for long wave or short wave operation, means for supporting said switch

device adjacent said band, said switch device being maintained in a prearranged position by said band and shaped portions on the band adjacent certain of said sections, said shaped portions operating said switch device when moved opposite thereto and the index mark associated with each section being disposed in a predetermined spaced relation with respect to said index member so that when the index member coincides with the index mark which is associated with a desired inscription disposed in said predetermined position, the tuning device is in a position for reception of signals from the selected broadcasting station indicated upon said desired inscription.

JAMES HENRY NADEN.